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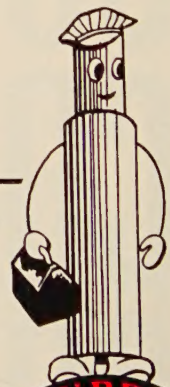

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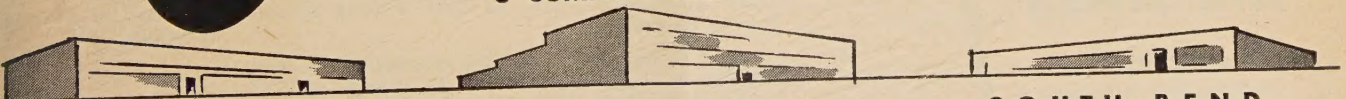

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statistics of . . .

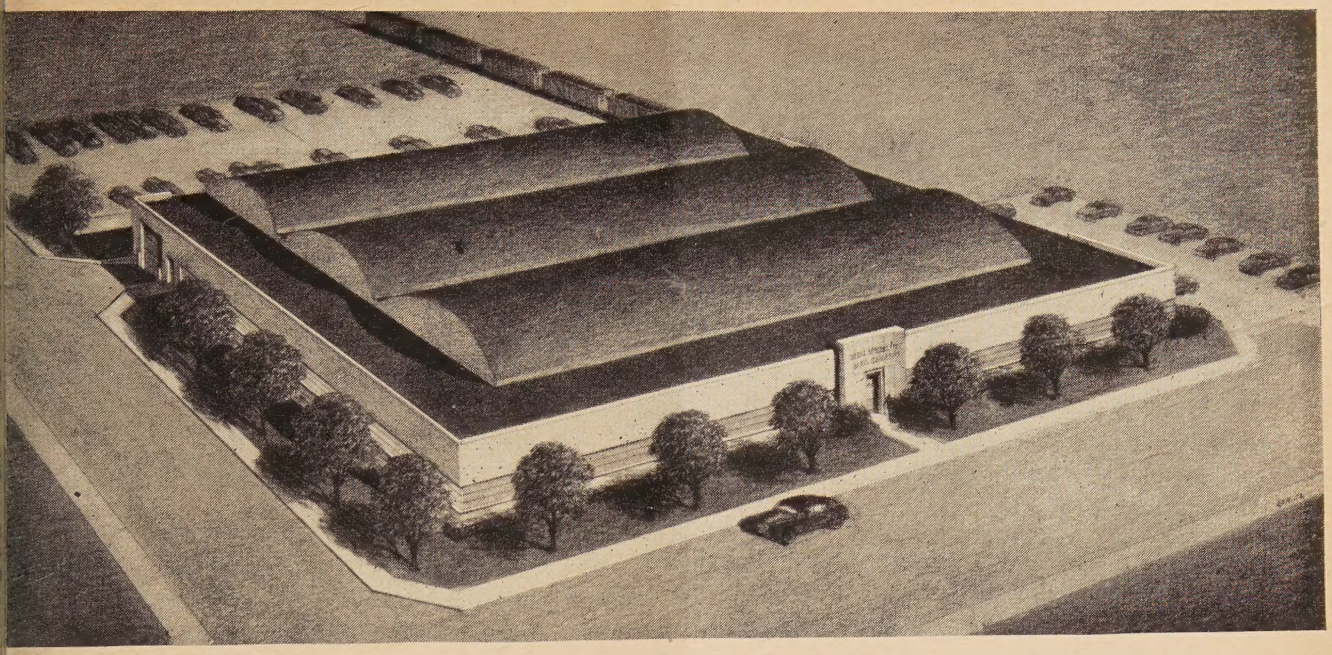
Chicago Business

	June, 1952	May, 1952	June, 195
Building permits	696	768	
Cost	$ 12,731,700	$ 16,518,800	$ 21,400
Contracts awarded on building projects, Cook Co.	1,996	1,703	1
Cost (F. W. Dodge Corp.)	$ 43,202,000	$ 47,416,000	$ 40,058
Real estate transfers	6,494	6,652	6
Consideration	$ 5,548,917	$ 5,272,903	$ 6,098
Department store sales index (Federal Reserve Board) (Daily average 1947-49 = 100)	97.1*	99.9	
Bank clearings	$ 3,711,408,802	$ 3,797,122,029	$ 3,593,321,
Bank debits to individual accounts:			
7th Federal Reserve District	$20,807,024,000	$19,824,251,000	$20,227,410,
Chicago only (Federal Reserve Board)	$10,672,303,000	$ 9,950,473,000	$ 9,886,324,
Midwest Stock Exchange transactions:			
Number of shares traded	1,108,132	1,078,701	1,050,
Market value of shares traded	$ 36,087,368	$ 31,568,829	$ 35,604,
Railway express shipments, Chicago area	965,645	985,306	836,
Air express shipments, Chicago area	52,914	53,704	52,
L.C.L. merchandise cars	17,953	19,519	19,
Elecric power production, kwh	1,085,892,000	1,177,300,000	1,104,190,
Industrial gas sales, therms	12,058,937	13,502,572	11,912,
Revenue passengers carried by Chicago Transit Authority lines:			
Surface division	42,243,046	45,598,192	49,733,
Rapid transit division	10,945,926	12,947,399	12,220,
Postal receipts	$ 9,615,634	$ 10,606,312	$ 9,331,
Air passengers:			
Arrivals	259,862	226,678	202,
Departures	271,973	230,308	210,
Consumers' Price Index (1935-39 = 100)	195.6	194.7	190
Receipts of salable livestock	364,262	373,235	329,
Families on relief rolls:			
Cook county	19,834	19,873	22,
Other Illinois counties	12,006	12,472	13,

* Preliminary figure.

September, 1952, Tax Calendar

Date Due	Tax	Returnable to
1	Second installment of 1951 Real Estate taxes becomes delinquent on this date and subject to penalty of 1% per month thereafter	County Collector
15	If total O.A.B. taxes (employer and employe) plus income tax withheld in previous month exceeds $100, pay amount to	Authorized Depositar
15	Illinois Retailers' Occupation Tax return and payment for month of August	Director of Revenue
15	Third installment (15%) of 1951 Federal Income Tax by Corporations	Collector of Internal Revenue
15	Payment of one-quarter of 1952 estimated tax found due March 15, or one-third of the balance of 1952 estimated tax found due June 15. (Those required to file declaration for first time, or making revised declaration, pay one-half of the balance of 1952 estimated tax)	Collector of Internal Revenue
30	Federal Excise Tax return and payment due for August, 1952	Collector of Internal Revenue



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EOMANS BROS. CO.	92,000 sq. ft. N. AVE.	CLEANSER PRODUCTS INC. (addn.)	12,500 sq. ft. 65th St.
IETAL SPECIALTIES MFG. CO.	45,000 sq. ft. N. AVE.	DOYLE FREIGHT LINES, INC.	28,000 sq. ft. 71st St.
INDBERG STEEL TREATING CO.	82,000 sq. ft. N. AVE.	GENERAL SERVICES ADMINISTRATION	310,000 sq. ft. 71st. St.
IATIONAL STEEL CONTAINER CORP.	34,000 sq. ft. 65th St.		

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For further details address inquiries to "Clearing Industrial District, Inc., 38 South Dearborn Street, Chicago 3" or call Randolph 6-0135.

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Chicago has reached its important position in the world today because its citizens have been able to work together in friendly competition. Notable among the cooperative efforts of good citizens has been The Chicago Association of Commerce and Industry — ever watchful over the interests of business and the general welfare of the community.

The businessmen joined together in this Chicago area organization have succeeded in making their city a good place in which to live and to do business. Their accomplishments are myriad, and this organization more than any other may be credited with the city's continuing economic soundness. However, no matter how much we accomplish, no matter how far we advance, there is always still before us *unfinished business.*

For example, here are some of the lines along which businessmen are exerting their energies today through their Association:

Local transportation — including problems of private vehicles, of mass transportation, of highways and superhighways and of parking.

Transportation terminals, both freight and passenger—including the relationship of these to railroads, motor carriers, air lines and water traffic.

Slum clearance — a name for a host of constructive activities involving better housing, better taxation methods, industrial development, crime prevention and the use of private enterprise and public action working in partnership.

Zoning — covering its relationship to slum clearance, to industrial development, to transportation and a variety of other aspects of our growing city.

Health — including work on sanitation, cleaner streets and cleaner air.

Better government — including ever increasing efficiency and economy and improvement of the operation of our political system.

All of this *unfinished business* lies before us, demanding the urgent attention of every businessman aware of the fact that the prosperity of his business depends directly upon sound organization of the community.

Chicago needs the active and intelligent participation of all its businessmen if it is to continue to be great. You can make your best contribution by joining the Association now. Nearly 5,000 business firms are working constantly to make this a better city for you and for the rest of us. Don't let them down.

Join today and help us with this *unfinished business.*

The Officers and Directors of
The Chicago Association of Commerce and Industry
1 N. LaSalle St. Chicago 2, Illinois
FR 2-7700

COMMERCE

Magazine

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Contents

Regular Features

MEMBER AUDIT BUREAU OF CIRCULATIONS

Alan Sturdy, Editor • Gordon Rice, Advertising Manager • Lewis A. Riley, Associate Editor

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in this issue... To Americans, who are altogether too much inclined to live for the present, it is refreshing now and then to take a sweeping look at the long-term future and what it holds for us. This month Dr. John T. Rettaliata, the youthful new president of Illinois Institute of Technology, views the next 50 years and the challenge they offer. Dr. Rettaliata figures that 50 million more Americans will be added to our population in that period. We will have to take vast strides on many fronts to accommodate this huge population, but, as Dr. Rettaliata points out, if we plan now we can forge a fuller, more prosperous and happier life for all of us in those years ahead.

• • •

Many scientists say the world is getting hotter — which has nothing to do with Chicago's extraordinary summer. On scores of fronts, technologists are striving to make machines operate at higher temperatures for this means tremendously increased efficiency. The big problem is finding materials to withstand the fierce temperatures involved. Strangely enough, science has now turned to the ancient art of ceramics for one solution to the heat problem. Today more and more products are being given a paper-thin ceramic coating to enable them to stand up under intense heat. Daniel F. Nicholson reports (p. 16) on the fascinating accomplishments in ceramic coatings and what they mean to the average consumer.

• • •

While many a retailer moans over lagging sales, there's one big group of salesmen who are too busy punching doorbells to even think about a sales slump. John A. McWethy reports (p. 18) on the Chicago-based encyclopedia industry which is truly one of the marketing phenomena of the age.

• • •

Public relations, a subject more and more companies are properly thinking about these days, continues to be sadly misunderstood by a great many businessmen. So declares Public Relations Consultant J. Handly Wright, who offers (p. 15) a series of suggestions for the company seeking to establish a successful public relations program.

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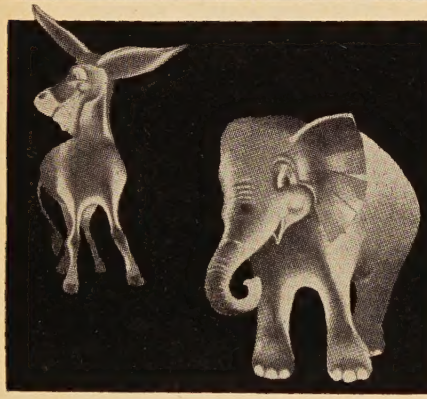

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The Editor's Page

eeded Watchdog

very taxpayer in this country has a real personal terest in seeing that a bill (S. 913), which failed of assage in the last Congress, is revived in the next.

This bill provides for a Joint Congressional Budget ommittee, to be made up of 14 members, seven ach from the House and Senate Appropriations ommittees. The committee would hire a permanent aff of technical experts to analyze each item in the roposed Presidential budgets and then to detail for ongress items which are wasteful or unnecessary.

This would give Congress that Constitutional control over the purse strings which, in actual practice, has largely lost. Few members of Congress are xperts on taxation and budget-making—few have he time or inclination to plough thoroughly through udget requests which are enormously technical and omplex in many instances. The result is that bills nvolving billions of public money are steam-rollered hrough House and Senate—and taxes approach the oint of confiscation.

S. 913 would provide Congress with what it needs nd must have—recommendations by experts free rom outside pressure and influence. It would make t possible for Congress to vote budgets in which vaste would be at a minimum. It could save us illions every year.

Costly Victory, But Worth It

The country will be a long time in tallying all the costs of the steel strike which has just ended. At this writing we know that 16,300,000 tons of badly needed steel were lost. There is also the prospect that a further loss will be sustained next winter because the mills will lack the ore that was not mined and shipped over the Great Lakes this summer. Twenty-five million tons were thus lost, 35 per cent of which would have gone into stockpiles for next winter. The 600,000 steel workers lost some $450,000,000 in wages. Wage losses were also sustained by more than a million other industrial workers employed by plants which had to shut down for lack of steel. These losses will continue until reopenings are possible and other plants and their employes may be on a restricted operating basis until balanced steel inventories have been rebuilt.

It is possible to measure the loss to the defense program in terms of planes, tanks and guns. It is not possible, however, to measure what these losses may mean to us in our international relations.

Had it not been for Phillip Murray's determination to force a union shop on the industry, most of these losses could have been avoided. On June 9, a week after the strike started and almost seven weeks before it was terminated, the steel companies offered substantially the same economic terms that the union finally accepted. All the workers gained for the last seven weeks of their strike was the retroactive application of the increased wages and benefits to two additional weeks.

Viewing this record, it is difficult to see any gains. There was, however, a gain which offsets all the losses. The steel industry forced Mr. Murray to back down from his demand for a union shop. Under the terms of the final settlement, employes must apply for membership in the union when they get a job, but they may withdraw their application between the fifteenth and thirtieth day of their employment. Any union member may also withdraw from the union at the time of the termination of the new contract. Moreover, workers in the industry who are not now members of the union need not join.

These conditions preserve the freedom of choice of the workers and establish the principle for which the steel companies were fighting. The industry's victory is a victory for all Americans who believe in the right to a job without union membership. Had the steel companies knuckled under, the monopoly power of big unions undoubtedly would have spread throughout all industry like wildfire.

We can all thank the companies for making the rock ribbed stand that prevented this. They stood on principle and won. What is more, they did so not only against Mr. Murray but against the very weight of the government itself for President Truman, Vice President Barkley, the Wage Stabilization Board, and Secretary of Labor Tobin all were aligned with Murray.

Senior Partner

The New York Stock Exchange has combined the figures of the 25 listed corporations which had gross revenue of a billion dollars or more in 1951.

The 25 corporations had total revenue of $51.3 billion. Eighty-five and four-tenths per cent of this was paid out for operating expenses, including salaries and wages. Of the balance, federal income and excess profits taxes took $4.2 billion, leaving only $3.4 billion, or less than half, for reinvestment in the businesses and dividends. Dividend payments totalled $1.9 billion.

These figures make it abundantly clear who the senior partner in American business is.

Alan Sturdy

Here...There... and Everywhere

• ***Actual Dispersion***—The Defense Production Administration reports that more than four-fifths of all new defense plants and major industrial expansions for which rapid tax amortization was authorized during the first 18 months of the Korean War were located outside the "central cities" of industrialized metropolitan areas. The practice follows the recommendation of the National Security Resources Board concerning industrial decentralization.

• ***Costly Bug Killer*** — The world's costliest insecticide — one pound would cost $18 million — has been produced by Gulf Oil Corporation of Pittsburgh. The tiny sample is radioactive and will be used to study how insecticides kill flies and other insects. Gas-flow counters will be used to record the location of the insecticide within the bodies of the insects it kills, showing how quickly the insecticide penetrates the body wall, where it goes, and how it reacts with tissues.

• ***Inexpensive Trial Test*** — The Chambers Corporation of Shelbyville, Ind., has introduced a new selling plan under which its dealers will install Chambers gas ranges in homes for a 30-day "taste test" for only $1. The new promotion ties in with the company's program of emphasizing that customers can save money by cooking "economy" cuts of meat by "retained heat."

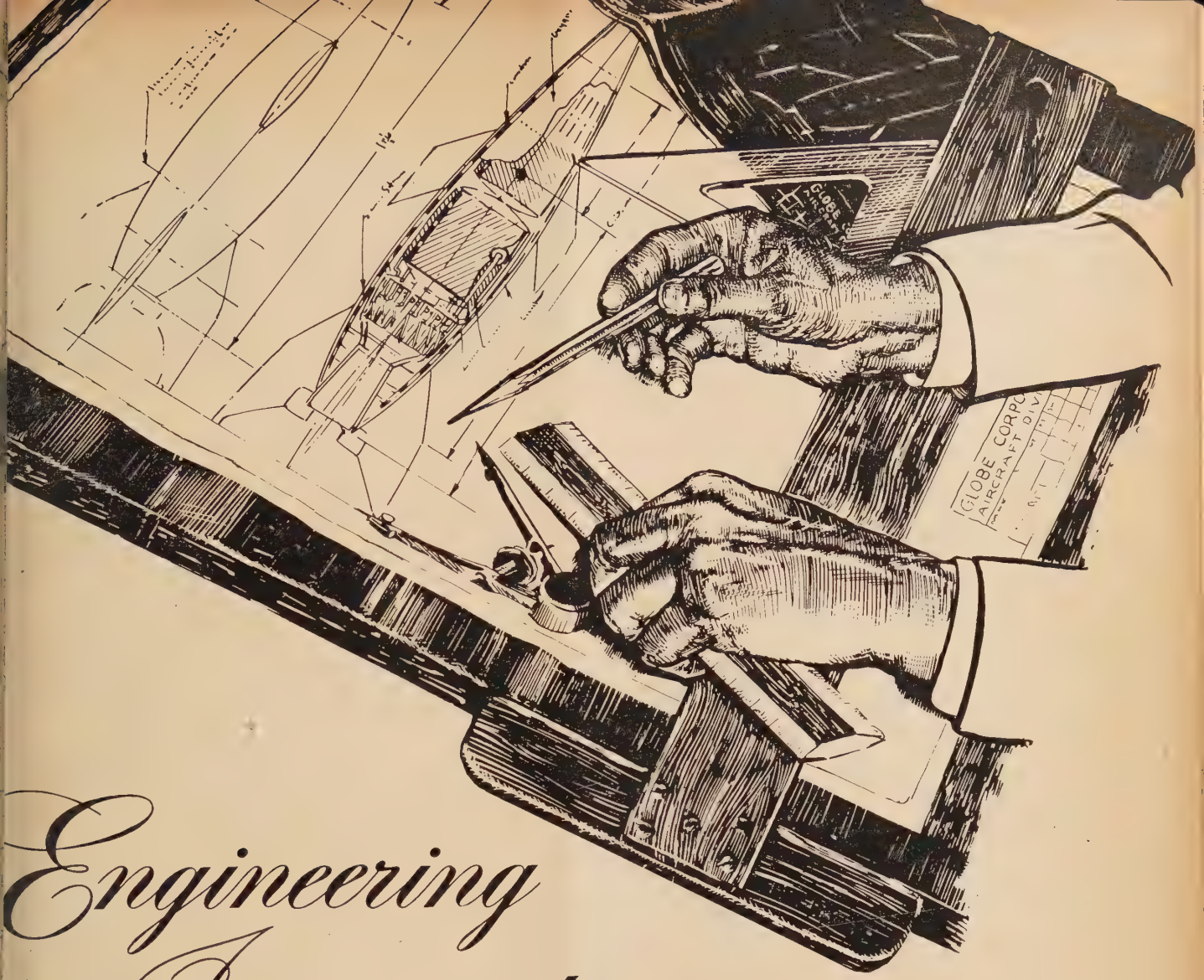
• ***Double Vacation!*** — Two vacations annually totaling three weeks will be received by some 350 monthly salaried employes of Whirlpool Corporation who have between five and 15 years service. The double vacation idea — one of two weeks and the other of one week, later in the year — was adopted following a medical recommendation that vacations are more beneficial to employes when taken twice a year.

• ***Airline Record*** — United Lines in June carried more passengers more miles than in any ot month in company history, acc ing to estimate figures reported sales vice president Harold Cr A record total of 240,590,000 re nue passenger miles were flown d ing the month, an increase of per cent over the previous hi established in August, 1951.

• ***Renegotiation Buildup*** — Cc merce Clearing House says gove ment authorities now anticipate t defense contractors and sub-contr tors will file some 57,000 annu financial reports, as required law, by June 30, 1953, and t 20,000 of these reports will be signed to the board's field orga zation for the full renegotiati process. To date, field offices ha received only about 1,500 of su cases. The Chicago law reporti organization adds that regulatio setting up standards and rules f renegotiation of defense contra are now practically complete.

• ***Now, Suggestion DAY*** — A ne idea was instituted recently at Re ington Rand's largest business m chines plant in Elmira, N. Y. Whe the company did a slight switch c the suggestion box idea and name June 4 as "Suggestion Day," it wo dered whether there would be a increase in the daily volume of su gestions. Doubts quickly dissipate Before "Suggestion Day" was ove the company had received no le than 1580 suggestions from its em ployes. One thoughtful young f male machine operator querie "Why do we drill and tap th hole?" Turned out that it was a operation held over from a previou

(Continued on page 31)



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Trends . . . in Finance and Business

• ***Optimism Seen Fading*** — After a business outlook survey of 228 companies in 28 manufacturing industries, the National Industrial Conference Board reports that management optimism seems to be fading and that less than 40 per cent of the companies surveyed now expect to exceed last year's sales figures in 1952.* In the last such survey, made in December, 1951, the majority of companies questioned held out high hopes that 1952 sales would surpass those of last year.

In commenting on the business outlook, management spokesmen offer a variety of reasons for their waning optimism. Some executives believe that the postwar boom is nearing an end and a return to "normal" levels is ahead. Others refer to the increased competition they are confronting as a result of largescale production, coupled with the growing availability of materials that recently were in short supply. Mention is also made of the tapering off of the defense effort which, according to some executives, has left "gaps" they are finding difficult to fill with civilian goods.

Lower sales, as well as higher taxes and increasing wage rates, are now expected to reduce 1952 net profit below last year's level in two-thirds of the companies surveyed. Because of this, a few companies have recently decided to cut their capital expenditure program below the original budgeted figures in an effort to stabilize their financial postions.

The board adds that, despite the pessimistic trend of most company replies, 47 of the 288 firms believe they can still achieve a higher sale level this year than they had antic pated last January. In most suc cases, the improved outlook is a re sult of the relaxation of goverr ment controls. The majority of th more optimistic companies are i the auto and construction industrie and their allied fields.

• ***Housing Outlook Strengthens*** — Home building activity, which wa expected by many authorities to di in 1952 from last year's near-recor level, now appears to be buildin up more steam than anticipate The United States Savings an Loan League notes that, althoug housing starts fell below 1951 leve in January and February, Marc starts jumped five per cent over th 1951 level, April starts (108,000 were more than 12 per cent ove same 1951 month, and preliminar estimates for May (101,000 starts indicate that that month as wel may exceed the 1951 level.

The league believes that whe figures on housing starts are finall compiled for the first six months o this year they may actually exceed the first-half figures for 1951. "I all probability," the league declares "the total for the year will also b higher than that of 1951 whe 1,091,000 units were started. Esti mates of government officials no exceed one million units for thi year in contrast with earlier pre dictions of around 800,000."

Among the factors which seem to be pepping up the home build ing market are the greater avail ability of materials, high income and continuing strong demand fo housing, slowly improving mortgag market conditions, and greater sta bility in construction costs. A though the mortgage market ha

*NOTE: For another appraisal of the business outlook see page 23.

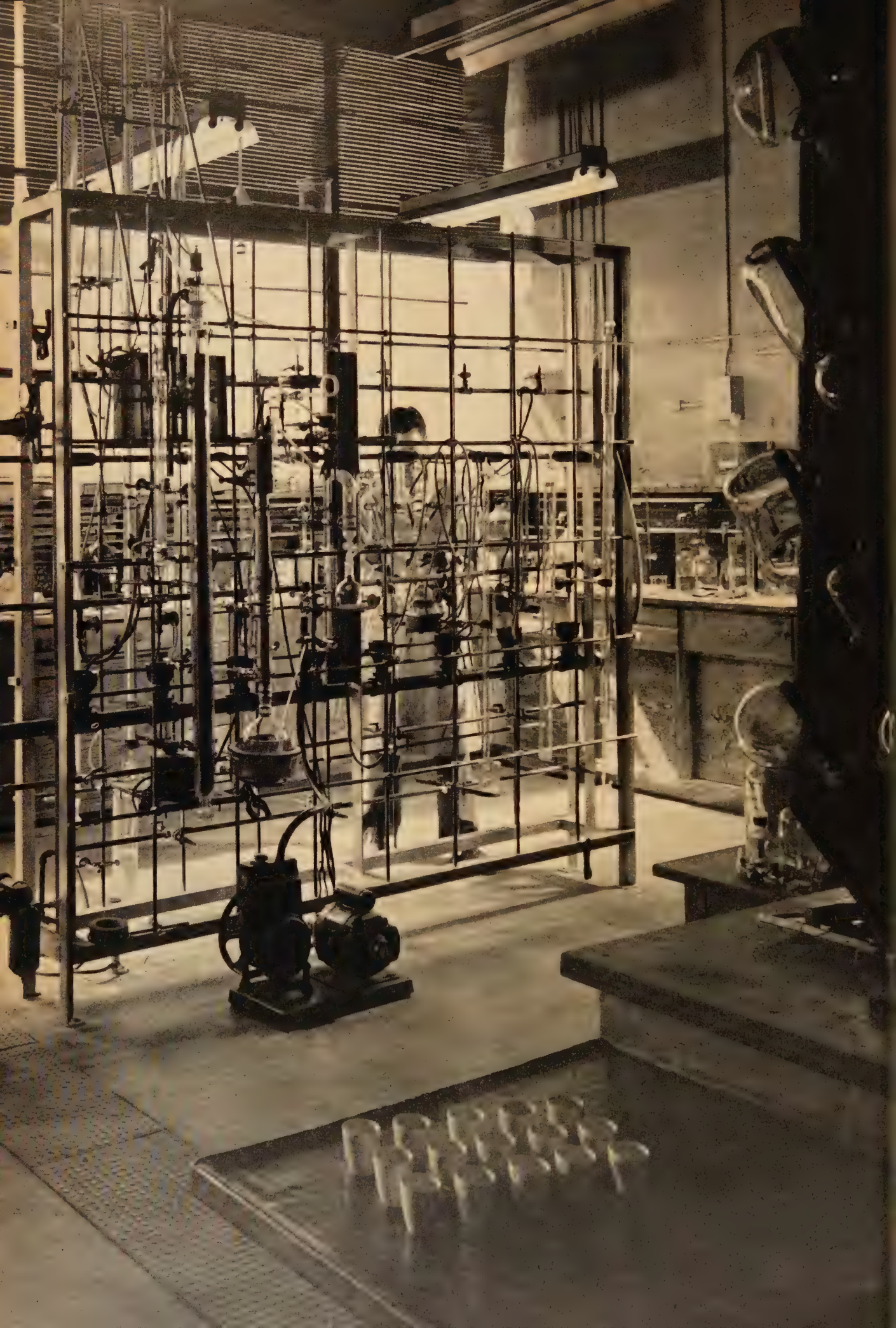
en relatively tight during the first lf of this year, the league be- ves several recent developments ll now tend to ease mortgage nding terms. These developments ere the advancing of government nd prices, the decline in business an volume, the relaxation of egulation X, and the continuing gh flow of savings into home fi- ncing institutions.

End of Sulphur Pinch — The itical sulphur shortage, which has lagued many industries since the orean War began, now appears to ave virtually ended. The Freeport ulphur Company, one of the na- on's largest producers of the com- nodity, reports that nearly a hun- red new sulphur-producing instal- tions in this country and in other ee world nations are rapidly in- reasing output and by the end of 955 will add about four million ns of sulphur a year to present apacity. This is equivalent to one- hird of the estimated 1951 free orld production of sulphur in all orms.

"There is enough new production n sight to dispel the threat of a ontinuing shortage," Freeport de- lares. "Even if the requirements f U. S. industry and agriculture hould increase by 1955 to the level stimated by the Defense Produc- ion Administration, there will be nough sulphur to meet the de- nand, assuming the new projects neasure up to expectations." The ompany says the new projects are xpected to add about 1.5 million ons of sulphur in various forms to capacity by the end of this year, 1.35 million more tons by the end of 1953, and 250,000 more tons by the end of 1954.

• ***Booming Canada!***—Speaking be- fore the Life Officers Investment Seminar at Beloit College last month, Economist J. Douglas Gib- son of The Bank of Nova Scotia declared that Canada's growth has been even more rapid than that of the United States in recent years. The physical quantity of Canada's production has almost doubled since 1939, he added, and since the do- minion's population has risen by only 24 per cent in that period, output per person is up about 60

(Continued on page 41)



The Challenge of he Next Half-Century!

By John T. Rettaliata

By the year 2000, we will have 50 million more Americans; to provide for them we must make big plans—right now!

WHEN billions are a commonplace figure today, I would ordinarily hesitate to talk in ms of millions. And a mere 50 llion or so at that—except that e 50 million I have in mind are ople.

They are the extra people we will adding to the population of the nited States in the half century ead of us.

The advent of this 50 million en and women—there may be nsiderably more if some of the recasts about our national growth me true—looms large in my oughts about the future of Illinois ech and of the country as a whole.

In some ways those 50 million ople seem to me to be among the ggest events on our national calndar.

They constitute a Red Letter ent because of the enormous pres-res they are going to exert on ery single seam and stitch of our tional fabric.

Adding 50 million or more people ill be like incorporating into the nited States another present day linois, another New York . . . a alifornia, a Texas, a Pennsylvania nd an Ohio: six of the most dense-populated states in the Union.

We number 156 million people today. To serve 200 million by the end of the century will demand the vast expansion of everything in the United States.

It means the tremendous enlargement of every one of our common services: water supply, communication, transportation, power systems and generation of energy. It means heightened production of consumer goods. It means more stores, shops, homes, apartments, garages. It means 50 million more hungry mouths to feed, calling for the great development of American agriculture, with large implications for further mechanical progress and biological progress as well.

More of Everything

And of course it means meeting the need for more schools and teachers; more hospitals, doctors and nurses; more churches and clergy; and many, many more scientists, engineers and other technicians, and better equipped institutions of science and greater teaching and research staffs.

Fifty million extra people are thus going to be a spur of almost unimaginable size to our entire economy. From the scientific point of view such an expanded population will surely demand the opening up of new, untapped resources, such as the oceans, seas and tidal waters; and of such areas as Labrador and the polar regions. It will press us mightily to search for substitute raw materials for industry, especially in our key resources, the minerals and the fuels.

It will urge us to develop the economical use of marginal resources such as the oil-shale seams of the Rocky Mountains. And beyond that, it will urge us to speed up the development of atomic energy for peace-time purposes and perhaps hasten our efforts to employ the energy of the sun to turn the wheels of industry and to run the electric fan, the TV set and the refrigerator at home.

Fifty million people will make imperative the creation of new processes, of better techniques, and stimulate radical improvement and revision in all our existing tools and machinery. Virtually every area of our economy, it seems to me, must be geared to meet the needs of a rapidly mounting population. And it must also meet other requirements as well, for we are entering upon a complicated half-century, rife with things that will deeply challenge all the abilities and ca-

"America has been living off the t of prior scientific discovery. It is imerative that we now encourage basic rearch." *Illinois Institute of Technology*

This article is a digest of an address before the Chicago Rotary Club. Dr. Rettaliata is president of Illinois Institute of Technology.

pacities of our industrial democratic society.

For example, science has not only given us a mechanical revolution. It has given us a biological revolution, whose full force is now becoming evident to all. Science has brought about the rapidly increasing proportion of older people in our population, illustrated quickly by the fact that while in 1900 four out of every 100 people were 65 and over, eight are of that age today. We have 12 million such older people today. Only about three million are in our present labor force. By the year 2,000 A.D. estimates indicate we shall have 26 million older people in the United States—13 out of every hundred. They will be a staggering burden if, predominantly they are financially dependent.

It seems to me, therefore, that another of the nation's big tasks in the coming decades is to find uses for our older manpower.

Enlarged Labor Force

Scientific advance must develop ways and means to that end. It must make the discoveries that will create new opportunities for employment of older people and minimize the cost of their support. We face indeed, the fact of a greatly enlarged labor force generally in the United States, from greater employment of older people, from the natural increase in population, and from the demands of women.

Women now outnumber men for the first time in our history. In increasing measure they are pressing to enter industry. One-third of the women in the United States today are employed outside the home. More jobs for a greater proportion of women than ever before must be found in the future.

Our labor force now is somewhere around 40 percent of the population. We may well look forward to a considerably larger percentage in the years ahead—to a working force of perhaps 75 million by 1970 and 90 to 100 million by the end of the century.

Shortening Work Week

If the future is in keeping with the past, we also are going to face the pressures for a steady lowering of the length of the work week. Economists are making predictions of a 30-hour work week, not by the end of the century, but as near as 1980.

If on the one hand the need of an expanding economy is for a greater flow of goods, the shorter work week will mean a lessened flow—unless output per man hour can be substantially increased.

Only an advancing science and technology, resulting in better plants, better tools and equipment, better materials and better methods, can accomplish the miracle required, and give men less work and more goods.

In the years ahead, the burden of social security payments will begin to fall upon us with increasing weight. The way that system operates today, no real reserve funds to meet future requirements are being accumulated by our national government. They are a lien on tomorrow. They must be paid out of future taxes. And taxes can only be paid through productivity.

National production must provide the wherewithal—an ever-increasing level of industrial output to which science and technology must substantially contribute.

Our national debt has reached the astronomical figure of more than a quarter trillion dollars. The share of each and every one of t in that staggering sum is too around $1,700. Only our extraor nary productivity now enables to pay the interest on that de which amounts to some $7 billi annually. Only by increasing p ductivity greatly in the years ahe would appear to reside much hc for the reduction of that debt.

Besides all this, we must ma tain, and our economy sustain, colossal defense program.

Designated for military expen tures in the current federal bud is more than half of every dollar national revenue called for. maintain that program—and to crease it if events warrant, c economy must be made to functi at the highest speed possible.

How can the backs of indust business and our people bear b dens such as these? How can also meet the needs of peak popu tion, and at the same time provi all with the rising standard of l ing we have come to regard as sential to the American way of li

Obviously, some of the answ lie in the political realm, in soc and fiscal policy, in legislative tion and in international areas.

Vast Productivity Rise

But the basic answer, it seems me, lies in an ever-growing prod tivity. Productivity is the very li blood of our economy. Productiv can even offset the wrong answe the maze of contradictions and m takes that may have hindered c development in the past and may with us in the future. In a wo productivity sufficiently high c help to bail us out of what I m generally describe as "social" err

I believe the key to productiv lies in just a few but terribly i portant things.

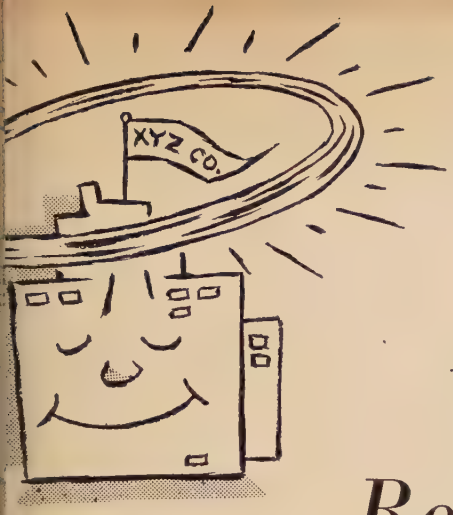
First, we must have more func mental scientific knowledge. C one thing virtually every scient will agree: we have been living the fat of prior scientific discover It is increasingly imperative th we now encourage and suppo more basic research.

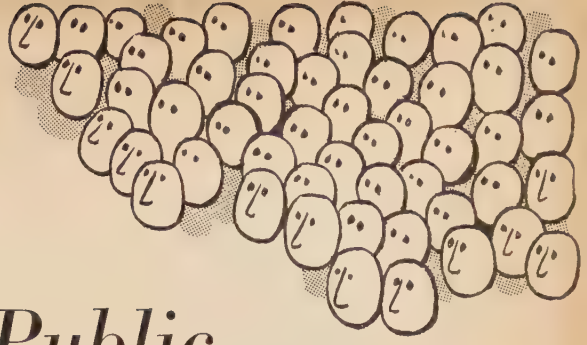
We must have faster technologic progress. The practical applicatio of discovery in pure science must speeded up. More innovations application must be made.

We must provide industry with

(Continued on page 38)

Dr. John T. Rettaliata . . . "fifty million extra people are going to be a spur of almost unimaginable size to our whole economy"





For Good Public Relations: First A Plan

J. Handly Wright

"Without a plan, it is unlikely that you have nailed down your objectives or the means to accomplish them"

T HAS been said many times and with great justification that no company can choose whether wants to have "public relations." he day it began in business, it rted having public relations. The oice is not whether a company ll engage in public relations, but ether it will give constructive ought to having good relations th the public.

Under these circumstances, it is range that so little thought has en given to the careful planning a public relations program. here are several reasons for this k of planning. In the first place, blic relations involves many in-ngibles. Public attitudes are hard measure, shifts in public senti-ent are unpredictable and the eans for reaching the public are verse and difficult to test.

Secondly, the idea still persists at public relations is essentially a b of publicity, and many com-anies take advantage of whatever mes along to keep their names in e public eye. But permanent good ill for a company cannot be built stray bits of newspaper publicity.

There is also the tendency to view public relations as a short term, instead of a long term operation. Many of those responsible for a company's public relations program are simply too busy with day-to-day problems to sit down and prepare a long term plan. They are so busy meeting deadlines, they have little time left for long range thinking.

Yet a long range plan is fundamental to sound public relations. Until you have a plan, it is unlikely that you have really nailed down your objectives—or the means to accomplish them.

Responsibility of Management

The construction of any program of public relations should begin with the recognition of public relations as essentially a management function. As W. T. Holliday, president of Standard Oil Company of Ohio, puts it, "Public relations begins with the public policy. It follows through the period in which action transforms those policies into results." Or as J. Carlisle MacDonald, assistant to the chairman of the board of the United States Steel Corporation, expresses it, "Public relations activities of United States Steel Corporation are considered a top management responsibility. Unless the policies of the corporation are in keeping with the national interest, there is no possible way of securing long term public support of our economic and social viewpoint."

Another fundamental common to all successful programs is universal participation. While policy is a management responsibility, the program should be of such a nature that everyone is encouraged to participate. Public relations policy should be simple, understandable and applicable to every employe—not just to management or the public relations department. Thus, instead of one department speaking for the company, every employe becomes a booster for the company. Robert S. Henry, vice president of the Association of American Railroads, expressed this goal when he remarked, "Public relations is part of the job of everybody on the railroad from president to office boy."

Basically, the drafting of a public relations program, involves three distinct steps: (1) the determination of objectives; (2) the identification of the publics involved in reaching those objectives; and (3) the selection of the means of reaching these publics.

There has probably been as much

(Continued on page 26)

The author, a St. Louis public relations nsultant, is past president of the Public elations Society of America

Ceramics

Astonishing heat resistance of ceramics: two burner tubes made of Inconel after 136 hours exposure to 2000 F. heat; right tube coated by Solar Aircraft's "Solaramic" process

ONE of the most formidable barriers to increased efficiency and lower cost in industrial processes and better performing, longer lasting automobiles and other mechanical equipment for the consumer is being torn down rapidly by the combined efforts of scientists and engineers working in the ancient art but new science of ceramics.

The barrier is the devastating effects of high temperatures on metals and most other materials, including even the finest super alloys, and its significance can be measured by a rule of thumb that for every increase of 10 degrees in temperature above today's practical maximums, the speed and efficiency of industrial processes can be doubled and the performance of engines increased tremendously.

Engineers know how to build up temperatures thousands of degrees hotter than any they can now use, but they haven't had materials that would stand up under this heat. Only a few scarce and expensive metal alloys, for example, can withstand the heat of the jet aircraft engine for any length of time, and even their life is short when compared with that of metals used in the automobile engine and in many industrial processes. With better materials, jet engine design could be simplified and the performance improved through the use of high operating temperatures. That goo too for the automobile.

While science is making impor ant progress in developing new an better metal alloys, it is movin with spectacular speed toward sol ing the temperature problem wi ceramics. Ceramics is an ancient a that goes back thousands of yea to the pottery of the earliest civi zations and the glazes of th Chinese. Familiar applications t day are the enameled finishes of th household refrigerator, the kitche stove and sink, and the bathtu However, today's demands on ce amics are so much more drastic tha anything known even ten years ag that a new science is coming in being — the chemistry of ceramic

Scientists are probing into th chemistry of solids, about which su

The Answer to "Super-Heat"?

e modern application of an age-old art promises a host of better, longer-

sting consumer products

By Daniel F. Nicholson

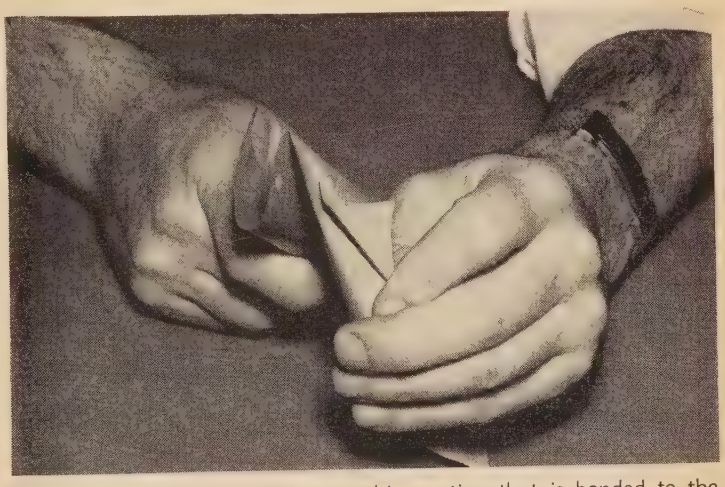
isingly little is known, in order to lock the secrets to the successful e of refractory materials and give industry the high operating temratures so universally desired and the consumer the tangible imediate benefits of cheaper, longer earing and better performing otor cars, furnaces and other prodts. Research is being conducted the laboratories of the federal vernment and some major corpotions, and both the government d private industry are sponsoring search by colleges, universities, d foundations. The scarcity of gineers — the overall shortage is timated at 18,000 — is most acute the field of ceramics.

War Started Research

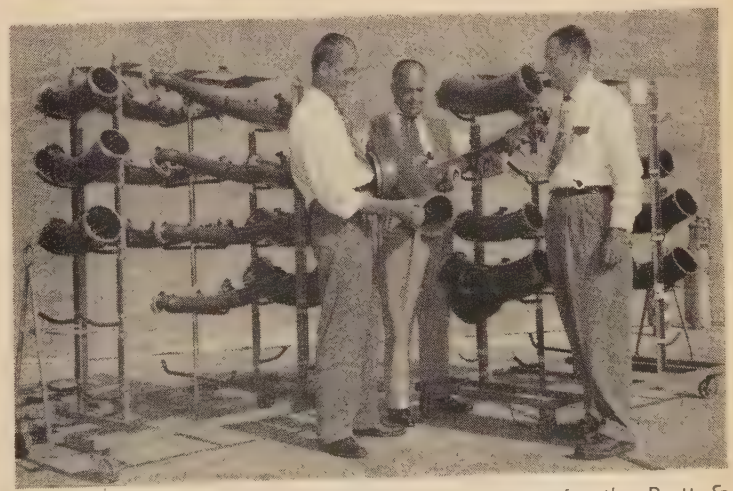
The impetus for this intensive inrest came early in World War II hen it appeared that crucial shortes in certain materials were iminent. One of these materials was ickel, another was chromium. The ossibility of replacing nickel-chroium alloys was suggested by the ct that the exhaust manifolds of me automobiles had been coated ith the conventional type of porcein enamel, with good results. The ational Bureau of Standards beun working on the problem in 942, and in June, 1943, reported the armed services that it had eveloped a new type of coating hat would permit the use of low-

(Continued on page 34)

One step in production of ceramic coatings: this is "frit;" it resembles crushed glass and results when a molten mass of metal oxides and fluxing agents are quenched in cold water



A "Solaramic" coating is a paper-thin coating that is bonded to the surface of a metal, thereafter sealing it against the effects of high temperatures and combustion products



Engineers examine ceramic coated exhaust systems for the Pratt & Whitney Wasp engine, built by Ryan Aeronautical

"Now, Mrs. Whipple, if you had a con
to see whether your child could dig a d
as fast as your neighbor's child, and y
child had a spoon and he had a sho
it wouldn't be fair, would it . .

By John A. McWet

Success Story: Punch More Doorbells!

Doorbell-punching encyclopedia peddlers have set sales rolling steadily skyward, while many others moan of slumps

WHILE getting his hair cut, Max Forbes, a Philadelphia encyclopedia salesman, turned an earnest face to the customer in the adjoining chair and fell into his canned sales pitch. Within a short time, the story goes, Salesman Forbes had not only sold the man in the next chair but in addition had signed up 14 other barbershop patrons for complete sets of the World Book encyclopedia!

Shortly afterwords, Forbes landed in bed with a 103° temperature. When his physician arrived, out came a prospectus from under the patient's pillow and in five minutes a dumbfounded doctor was signing his name on the ever-handy order blank!

The fabulous fact-and-perhaps-some-fiction accounts of present-day encyclopedia salesmanship go on and on. Another World Book salesman alleges that he recently sold 26 sets of books to gas station attendants while driving from Chicago to Salem, Oregon. And a third salesman from the same firm says, with a straight face, that he signed up 10 inmates of an insane asylum before discovering where he was!

However strained the truth may be, there is no denying that encyclopedia salesmanship is a remarkable marketing phenomenon. It is s selling feats as these that expl why the "fact book" industry been able to keep sales climb while producers of autos, refrig tors and a host of other consum goods have been moaning over sa slumps.

The super-selling of encyclope firms stands in vivid contrast to t half-hearted selling of the avera retailer. As the vice chairman Sears Roebuck, Theodore V .Hous puts it, "How long has it been si an automobile salesman has ex cised enough salesmanship to co ring your doorbell and demonstr a car?"

ears provides a good example of
v hard-hitting encyclopedia sales-
nship pays off. The mail order
use launched its American Peo-
s Encyclopedia in 1948, at first
ing to give the public a bargain-
lf value. The set was offered
ough the catalog; then at Sears'
ail stores. Although the 20-vol-
e set was priced at a mere $79.50,
public gave the bargain offer an
shoulder.

So Sears hired Clarence A. Hoff-
n, then vice president of a long-
ablished encyclopedia firm, to
mp some life into the encyclo-
dia department. The price was
ked to $179.50 and the proven
ling techniques of the encyclo-
dia business were applied. The
sults were spectacular. In 1951,
es zoomed 600 per cent above
50, and volume so far this year
s been 3½ times the same 1951
riod!

Old timers in the Chicago-centered industry have also been showing impressive sales gains. The patriarch of the business, 184-year-old Encyclopedia Britannica, Inc., ran up record sales in 1951 and volume the first four months this year is up another 30 per cent.

Field Enterprises, publishers of the World Book and Childcraft, sold four times as many of these sets last year as in 1945, when Marshall Field acquired them. This year, they're showing a further gain of 35 per cent and the company figures that sales will double again before 1957.

The same story is told by other encyclopedia firms. F. E. Compton and Company says sales in the first quarter of this year topped the same 1951 period by 36.2 per cent. Book House for Children and United Educators, Inc., two other Chicago firms, say sales are up sharply this year. Meanwhile, in the east, Grolier Society, Inc., publisher of the Book of Knowledge for children and Americana Encyclopedia for adults, says sales this year are 37 per cent ahead of 1951, which was five times 1941.

Other companies — about 55 in all — that make up the "fact book" industry all seem to be enjoying a sales boom. In 1950, industry-wide sales totalled an estimated $71.5 million, and last year the best industry estimate is that sales reached $75 million or more. This, the encyclopedia folks note, is about double the amount of business the industry did a decade ago.

The most important ingredient in the encyclopedia sales formula is simply this: make lots of calls. Men who sell these books don't wait for business to drift in; they go after it. Leading firms, in fact, sell no books through stores — only door-to-door.

The late F. E. Compton once explained why: "Encyclopedias are like life insurance. Everybody knows their value, but almost nobody will buy them over the counter. Such is the force of human inertia that we have to be persuaded to do what we know will benefit ourselves and our families."

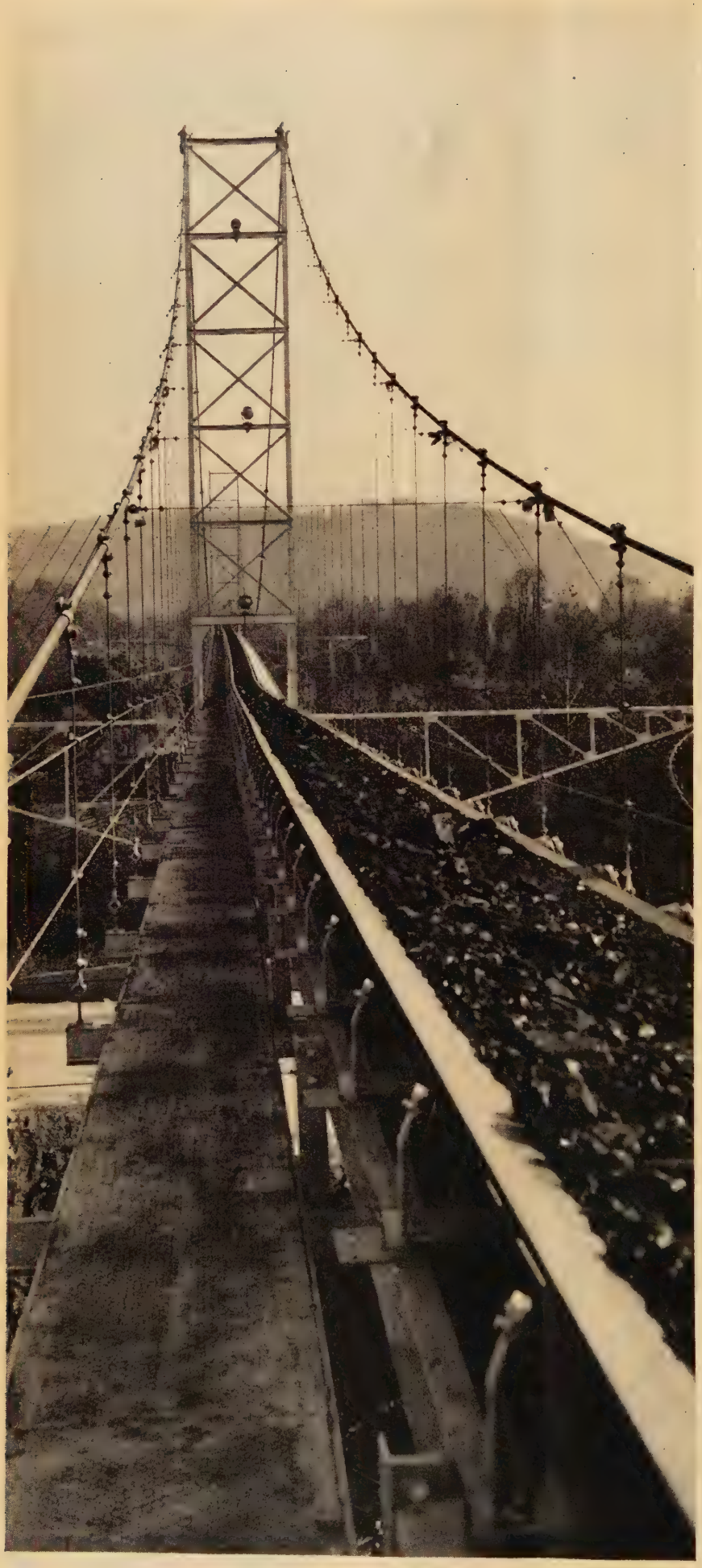
Thus the big publishers hammer

(Continued on page 42)

What The "Fact Books" Cost

The largest encyclopedia publishers publish their books in a variety of bindings — including some fancy hides that run the price to over $1000. Here, however, is a representative list giving cash prices for the least expensive binding:

Encyclopedia Britannica (24 vol.) (senior edition)	**$259.00**
Britannica Junior (15 vol.)	**105.00**
World Book (18 vol.)	**120.00**
Childcraft (14 vol.)	**66.00**
Americana (30 vol.)	**246.10**
Book of Knowledge (20 vol.)	**119.50**
P. F. Collier Encyclopedia (20 vol.)	**170.53**
American Peoples Encyclopedia (20 vol.)	**179.50**
Compton's Encyclopedia (15 vol.)	**109.50**



Speed Up

INDUSTRY urgently needs to re
duce costs quickly and sharply
The urgency stems from pres
sures such as increasingly dynami
competition, the growing deman
for quality merchandise at lowe
prices, rising taxes, and steadil
higher labor and materials cost
There was a time when industr
looked to better methods of makin
and processing goods for major cos
reductions. In many factories today
however, the dramatic and bi
strides involving more efficient fab
ricating have already been taken
and further progress must be mad
in small steps. But for many buss
nesses, small steps are not enough

Major savings are still possible i
a vital operating area which indus
try generally has overlooked or neg
lected, although it affects the cos
of every product. Only recently ha
materials handling begun to receiv
the attention it merits.

Materials handling operations do
not add to the value of a product
They only add to the manufactur
er's costs. Yet, it is estimated tha
on the average materials handling
accounts for about 22 per cent o
industry's costs. In some cases th
percentage is as high as 95 per cent

Operations that make up so grea
a part of costs should and can be
scientifically analyzed and improved

United States Rubber Co

← Ultra-modern handling: huge conveyor belt hurtles 400 tons of coa over Cumberland River every hour

Handling and Cut Costs, Too!

Despite all the talk about scientific materials handling, few companies yet enjoy its benefits

By Irving M. Footlik

The relatively new science of materials handling has saved millions of dollars for cost-conscious companies. In many industries, it is the last remaining area wherein management can effect substantial operating economies. Although much has been written about materials handling, relatively few companies are yet enjoying the benefits this new science offers. It is with this fact in mind that the following article by a materials handling authority is presented. One of the founders of the American Material Handling Society, the author is now in charge of materials handling for the Stone Container Corporation of Chicago. In this capacity he has given advice on materials handling problems to many companies in various industries. In addition, he is an instructor in materials handling at the Illinois Institute of Technology and is co-author of a text book on the subject. The Editors.

But this has been accomplished in all too few factories thus far. The reason is that few executives actually realize the extent of their materials handling problems, and fewer still are acquainted with the variety of modern solutions available.

The term "materials handling" is a far-reaching concept, defined by the American Material Handling Society as "The art and science involving the movement and storage of all types of materials. It is associated with words like lift, push, carry, hold, transport, stack, dump, place, assemble and roll. It covers the handling of materials at any stage – receiving, temporary storage and movement of raw materials to processing lines, as well as processing, assembly and distribution.

Materials have been "handled," of course, since pre-historic times, but the modern concept of materials handling as "an art and science" has developed only in recent years, particularly since the war. In this short time a substantial fund of knowledge and a large selection of new tools have evolved, that combined are capable of remarkable achievements. Sometimes new methods have cut handling costs as much as 98 per cent! Furthermore, modern handling not only makes for more efficient and economical operations, they almost invariably make working conditions safer and easier.

The fundamental objective is to move materials from point to point without back-tracking, to keep transfers to a minimum, and to deliver materials to their appropriate work places or production centers with a rhythm that avoids congestion, delays or unnecessary handling. This is accomplished primarily through the substitution of mechanical power for muscle power, the development of larger load units, greater storage height, and a constant materials flow throughout an entire plant layout.

Costs Cut 70 Per Cent!

Mechanical equipment, numerous in types, has been designed to move heavy and bulky loads, often with astonishing results. In the lumber industry, for example, an automotive straddle truck picks up, transports and releases a load. This and other mechanical equipment has saved 90 per cent in handling time and cut costs by 70 per cent!

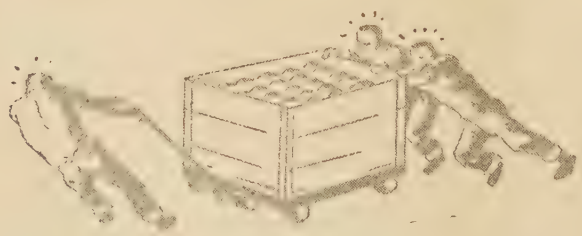
Advances in mechanical equipment have encouraged the development of larger loads, including unit loads which are groupings of smaller components. Large unit loads, devised in sizes to fit and make maximum use of standard shipping facilities, can be quickly loaded and unloaded mechanically. In many cases, savings in freight car demurrage alone soon pays for new handling methods.

Larger unit loads are achieved by various means. Widely used is the pallet, which is simply a load-supporting platform that can be lifted or hoisted mechanically. Pallets are made of wire, sheet metal, paper and wood, some expendable and others re-used in exchange

MATERIALS HANDLING CHECK LIST

Is materials handling a problem that needs attention in your plant? Every "yes" answer to the following check list is an indication that your handling system may be antiquated and costing you needless waste in dollars and manhours.

- ☐ **Are your indirect labor costs high?**
- ☐ **Do you have many employe accidents due to the handling of materials?**
- ☐ **Do you have many handling jobs requiring two or more employes?**
- ☐ **Are skilled employes such as machine operators required to waste time handling materials to and from their machines?**
- ☐ **Are there frequent delays in production time due to poorly scheduled delivery and removal of materials?**
- ☐ **Do you find materials jammed up at certain points?**
- ☐ **Can you make more efficient use of your storage space by mechanical high tiering of stock to the ceiling?**
- ☐ **Is much of your material damaged during handling?**
- ☐ **Are your demurrage costs high?**
- ☐ **Are maintenance costs on your material handling equipment continuously rising?**
- ☐ **Do you load freight cars or trucks by hand?**
- ☐ **Can you make more efficient use of "unit loads?"**
- ☐ **Are you using power arrangement when gravity could move the work more economically?**
- ☐ **Are there many single handling jobs requiring two or more different types of handling equipment?**
- ☐ **Do you try to make one kind of equipment do all kinds of handling jobs?**



pools. Often shipping packages are redesigned to conform to pallet loading.

Efficient large unit loads that do not make use of pallets also have been developed. Some suppliers have designed boxes and skids for mechanical handling. And certain packers have worked out an ingenious technique for freezing a bulk pile of meat—with space left for lifting by a fork truck. These frozen piles then can be stacked just like boxes.

Another new device for palletless unit loads utilizes corrugated paperboard, interlaced between individual shipping boxes or bundles so as to tie them together into a large unit load for mechanical handling. This inexpensive tie-in load is applicable to building materials and foods, and can reduce handling costs of shipping and storing by an estimated 50 to 75 per cent.

"Cubic Foot" Storage

Thanks to large unit loads and mechanical stacking equipment such as fork trucks and overhead or mobile cranes, management now can regard storage space in terms of cubic feet instead of square feet. With modern handling methods, maximum storage efficiency is achieved by stacking materials to heights that were uneconomical, unsafe or impossible with muscle power.

For greater efficiency, the plant layout should integrate every installation with the over-all handling problem. It should provide for continuous or appropriate intermittent flow of materials. Routes of travel between operations should be clear-cut and as short as possible. Operating space should be provided for materials handling equipment.

Every manufacturer owes it to himself and to his business to make sure that existing equipment and methods are constantly reviewed for possible improvement and replacement by new machines. Cost comparisons of old and new means of handling can be made by an analysis similar to that used for judging means of processing.

The assortment of materials handling equipment is numerous, varied and growing. Choosing the equipment that best meets the needs of a particular factory calls for fa-

(Continued on page 45)

Whither Business Now?

A group of midwestern economists offer a statistical appraisal of the future

By Guenther Baumgart

HAS the postwar boom, and particularly the Korean boom, run its course? What is now ahead for business — a leveling-off, a minor recession, a serious downtrend, or further inflation?

Professional forecasters are by no means agreed on the answers to these vital economic questions. Just a few weeks ago, for instance, a group of CIO forecasters reported that they saw "Depression" written in their crystal balls, either next year or certainly by 1954. Other forecasters are predicting a continuing high level of prosperity, certainly through the remainder of this year and probably well into 1953.

One group of professional and amateur forecasters with singular qualifications for estimating the future course of business is the Chicago Chapter of the American Statistical Association. The group is composed chiefly of practicing economists representing several hundred midwestern companies as well as several government agencies. Included, for example, are economists of International Harvester, U. S. Gypsum, Commonwealth Edison, Jewel Tea, Standard Oil and the Illinois Employment Service.

Annually for the past seven years the Chicago ASA chapter has held a contest among its members to forecast business conditions six and twelve months ahead. Specifically, this has involved forecasting the anticipated levels of four basic business barometers — total personal income, total civilian employment, industrial production and wholesale prices. Although the individual forecasts are made in competition and later checked against actual conditions, the predictions of these economists are a good deal more than a playful probing into the future. In many cases economic forecasts made by these men and women are used by their own company managements as a basis upon which company policies concerning plant expansion, inventory policy, merchandising programs and the like are built.

Greater Agreement

What makes the most recent collective forecast particularly significant is the fact that the economists' group was in closer agreement on the anticipated level of business in October, 1952, and even in June, 1953, than ever before. Furthermore, the group thinking held that the four business indexes would stay very near their present high levels throughout 1952 and the first half of 1953.

The predicted levels of each index for October, 1952, and June, 1953, together with the actual levels last April, are presented in the table below.

The average deviation among individual forecasters from these group predictions was in no case as great as three per cent. In anything as precarious as specific index forecasting a year ahead, this is remarkably close agreement. In the case of total personal income all but the most extreme guesses were between $245 billion and $275 billion; hence, all were within five per cent of the group average. In the case of total civilian employment, the predictions ranged between 58 million and 64 million to make a total forecast range of only seven per cent. With but one or two exceptions, all forecasts for industrial production were between 200 and 230; and all but a few of the whole-

	Actual (April, '52)	Predictions October 1952	Predictions June 1953
Total personal income ($ billions)	258.9	260.8 +1%	259.3 +0.5%
Total civilian employment (millions of persons)	60.1	61.3 +2%	60.2 +0.5%
Index of industrial production (1935-39=100)	217	219.1 +1%	216.9 −0.5%
Index of wholesale prices (1947-49=100)	111.9	111.7 −0.25%	110.6 −1%

The author is in charge of the Business Problems School of the Chicago Association of Commerce and Industry.

sale price index forecasts were between 102 and 119.

These four indexes were selected for analysis because together they reflect the overall condition of the national economy. The first index, total personal income, is a comprehensive measure of how many people are working, what their earnings are, how long they are working each week, how their investments are paying, and what farms are yielding. The largest component—salaries, wages, and other labor income—accounted for $178 billion of the $258.9 billion annual rate of total personal income for April, 1952, the date on which the forecasters based their predictions. By comparison, total personal income in 1939 was only about $72 billion. By 1944 it had risen to $165.9 billion, and in 1949 it reached $205.1 billion.

Civilian Employment

The second index, total civilian employment, may be an even more realistic measure of national economic health for it is a physical, not a fiscal, measure. Inflation is not reflected in this index. In 1939 total employment stood at 45.8 million. In 1944 it was 54 million, and in 1951 it averaged 61 million. The April, 1952, figure on which the forecasts were based was 60,132,000 and the June, 1952, figure, in what appears to be a seasonal climb reached 62,572,000 (as compared with 60,044,000 for April and 61,803,000 for June in 1951).

The third index, the Federal Reserve Board's index of industrial production, is the classic national measure of the output of manufacturing and mineral industries. This, like employment is a measure of physical output rather than price levels. It is high when the country is prosperous.

Measure of Cost Also

Finally, the fourth index, the Bureau of Labor Statistic's index of wholesale prices, is a measure of costs to buyers as well as prices which sellers obtain. Its ups and downs, in general, are indicative of what is happening to the cost of living. (This is not, however, the index which is usually used to measure cost of living. That is the BLS's consumer price index.)

At a meeting of the Chicago ASA chapter, held late in June to discuss the forecasts, several significant points were raised.*

The statistical group was in virtually complete agreement on three points: (1) that the business indexes under consideration would continue at about current levels through April, 1953; (2) that the indexes would very likely still be on a gradual rise by October, 1952; and (3) that they would reach a peak between October and April, and by next April they probably would be at or near October, 1952 levels, but by then gently declining.

The group also placed considerable emphasis on the fact that, although the overall outlook was for no change, individual companies could not necessarily anticipate uniformly steady business. The consensus was that every company should examine the outlook for its own industry, considering such facts as these: whether defense stimulated plant expansion was complete; whether markets were becoming saturated; whether new markets were developing; and whether recent changes in freight rates were affecting the plant location—customer location relationships of that company and its competitors.

Steel Strike

The steel strike, which was just beginning at the time of the June forecasts, was, of course, the big imponderable. If the strike turned out to be relatively brief, the feeling among the economists was that commerce and industry could catch up and the overall trend of business for the year would be only slightly affected. To the extent that the strike has caused substantial stoppages in other industries, the total production indexes will suffer setbacks for the year.

Despite the attention it will doubtless command, the national election this fall was regarded by the economists as having less influence on the course of business over the next year than might at first be expected. The reasoning was that because federal buying commitments are made far in advance little could be done immediately about federal expenditures, certainly nothing of significance within the first four months of the next administration. The possibility of war was not overlooked, although the forecasts were based upon the continuation of "semi-war"—not to-

*Note: The dicussion was led by a panel consisting of Garfield Cox, dean of the School of Business of the University of Chicago; Lester Kellogg, economist of Deere and Company; William Winfield, economist of Monsanto Chemical Company; Richard O. Lang, economist of S. C. Johnson Company; and the author.

"Mr. Hoskins owns the shop. He likes to sneak in after quitting time and play around a bit!"

THE SCORE

A year ago, when the statisticians were not in nearly as close agreement as they were this year, their predictions were, on the average, reasonably close to what the indexes actually turned out to be. The predictions and the actual figures were as follows:

	April 1952 Forecast made in 1951	Actual April 1952	Percent Forecast Missed Actual
Total Personal Income ($ Billions)	255.6	258.9	2% low
Total Civilian Employment (Millions of persons)	62.1	60.1	3% high
Index of Industrial Production (1935-39 = 100)	233	217	7% high
Index of Wholesale Prices (1947-49 = 100)	117.2	111.9	5% high

tal war. The latter, of course, would nullify all predictions.

One other interesting aspect of these predictions is the fact that in addition to forecasting the future of business, these economists, by their very forecasts, actually influence management decisions and therefore to a degree the trend of business. Thus, it can be assumed company policies will reflect this optimism—except for one great "if."

Just how seriously has the steel strike influenced this hopeful outlook? At worst, it could have, of course, nullified the predictions of even the most successful economic analysts — who only a few weeks ago were in unusually close agreement on the short term outlook. At best it has merely emptied the pipelines which will have to be refilled by more months of high levels of production.

For Good Public Relations

(Continued from page 15)

misinformation and fuzzy thinking on the objectives of public relations as all the rest of the subject put together. I have heard the objectives of public relations described as anything from a "free" substitute for paid advertising to making the boss a "big shot." Both concepts are absurd, for they overlook the prime function of public relations in modern business.

The purpose of business is to acquire and serve customers at a fair profit. Public relations should contribute to this purpose or it has no place in the business picture. It cer tainly can't serve as a substitute for advertising, nor is it performing a very useful or truthful function if it has to be employed to sell a per sonality. Those who think of public relations only as publicity are con fusing public attention with public relations. As a matter of fact, public attention is not necessarily good public relations and is often down right risky. It is easy to attract public attention and to forfeit public respect.

The objective of good public re lations for any company is the same. It is simply to win friends for the company. There isn't anything com plicated about it. Of course, there can be any number of corollary ob jectives — such as winning recogni tion for the company as a leading producer in its field, stimulating employe pride in the company, and creating good community relations. But through all these runs the great common denominator of winning friends. So in determining your ob jective, it is a good idea to face squarely up to the simple fact that the prime purpose is to win friends and then take off from there in any particular direction you wish.

With the objectives thought through and identified, the next step in building the program is the identification of the publics in volved in order of their importance to a company. Here it is easy to start a spirited discussion, yet the thinking you do in arriving at the answer to this question determines the boundaries of your program.

Professor Harwood L. Childs says: "The number of different publics in a community is theoretically the number of distinct combinations of individuals possible in that community." It is your job to narrow this choice down to those easily identifiable and easily reachable segments of the public of most importance to you. Obviously, they will vary for a cigarette manufacturer must reach a wider audience than a machine tool builder.

In my opinion there are five broad groupings of the public that apply to any enterprise and probably in the same order to most of them. I would list them as follows:

1. Employes.
2. Customers.
3. Plant community.
4. Key opinion moulding groups.

such as editors, political leaders, commentators, and the like.

. Stockholders.

have acknowledged that there ght be a difference of opinion on order of importance. All I can is give you my reasons for rank- them as I do.

irst, employes. Thoughtful pub- relations practitioners have long arded good employe relations as rime factor in good public rela- ns. But comparatively recent sur- s and studies have produced rwhelming proof of this fact. A ge oil company in the midwest d an opinion survey made not g ago in the communities in ich its plants are located. The ject was to find out what people the community thought of the mpany.

Then, breaking down favorable d unfavorable opinions, the com- ny came up with this interesting t. Seventy-seven per cent of those ople in the various communities o held favorable opinions of the mpany, received those opinions m talking with satisfied employes.

Source of Opinion

On the other hand, 56 per cent those who held unfavorable opin- ns about the company received ose opinions from talking with satisfied employes. Even admit- g that people in a plant commu- ty, in daily contact with employes, e likely to be more influenced by ople than by the printed word hich may be more influential in n-plant areas, still the study pro- des startling proof of the impor- nce of satisfied employes. In fact, e might go even further and say at it may be possible to have good mployе relations without having od public relations, but it is im- ossible to have good public rela- ons without good employe rela- ons. As C. E. Persons once wrote, The real instruments of good pub- c relations are people. How people nink and what they do with refer- nce to any institution are all there s to public relations."

If employes are first in impor- ance, it follows that the customer - the man or woman who buys the roduct and whom the enterprise xists to serve—should be next in ublic relations thinking. Thus, I ave ranked customers second.

I have next placed the plant com-

munity for here is where the bu ness is located and where it mu recruit most of its employes. He is where the laws will be made — at least some of them — governi company operations. It is therefo of utmost importance for a co pany to be concerned with that se ment of the public which makes the plant community.

Fourth I have placed edito writers, commentators and oth opinion leaders who, by the natu of their work or their standing their profession or community, c influence the thinking of many pe ple. I have placed the stockhold fifth, not because I consider him minor importance but because, most instances, the other grou outrank him in public relatio importance.

The truth is that all five of the broad groups are of immense an almost equal importance in pubb relations!

Selection of Methods

Finally, there is the selection the means you will use to rea these publics. Here is where yo program must of necessity be inc vidually tailored to fit your ow problem. What means you will u to make friends with what publi depends to a very great extent c what business you are in and c what you have to offer to attract interest these publics. But in thin ing out this section of a progra it is essential to bear one cardin fact in mind. Actions speak loud than words. You will be more i terested in thinking of things to d rather than things to say. In oth words, here is where company pc icy begins to operate in the mo direct manner. What you do to for employes, what action you tak in dealing with customers, how yo live up to your citizenship oblig tions in the community, how yo work with your editors and co mentators and what your compar does in the way of earnings f your stockholders, are the determi ing factors in your public relatio program. Not what you promise c say to these groups.

Your program must be hone and sincere. It must accurately r flect company policy. And it mu be carefully planned and based o intelligent thought. This is the e sence of competent public relation

Invest in the Middle West

Reviews of Middle-Western Companies

by D. F. NICHOLSON

WHEN the Chicago Corporation first ventured into the oil business in 1938, its assets aggregated 32,000,000 and its preference stock, the call price, represented a claim of $38,500,000 against those assets. The common stock, on the basis of assets, was worth $6,500,000 less than nothing.

Since 1938 the company has paid 28,500,000 in dividends, retired 32,000,000 of preference stock, and the balance sheet value of the common stock now exceeds $30,000,000 represented largely by oil and gas properties and plants probably worth several times the cost figures at which they are carried. The common stock, which sold for as little as 50 cents a share on the Midwest Stock Exchange in 1941, was selling at about 21 in mid-july of 1952.

This spectacular change accompanied the complete transition of the Chicago Corporation from an investment trust to an operating company in the oil and natural gas business, with particular emphasis on the gas.

Born Just Before Crash

The company started in business as an investment trust in September, 1929, only weeks before the stock market crash wiped out the asset value of the common shares. A new and bold investment policy was adopted in 1937. Chicago Corporation became a financer of and investor in enterprises that offered opportunities for substantial capital appreciation. The standards set up were: better than ordinary prospects of growth; good management talent; the management must share to some degree in the risks; and the enterprise must have economic usefulness and the prospect of profits.

In carrying out the new policy Chicago Corporation made impressive profits from a number of enterprises and investments, but one proved so successful that the company abandoned not only its original investment trust activities but also its role as a provider of risk capital to promising businessmen. The annual report for the year 1951 made specific mention of the new status when Richard Wagner, President, in his letter to stockholders, said: "It will be apparent to stockholders that the corporation is now primarily engaged as an operating company in the oil and gas business."

Initial Investment

The initial investment in this new line was in a natural gas recycling process. A company was formed in 1938 to process natural gas in Texas to recover valuable hydrocarbons and then pump the gas back into the ground. This venture led Chicago Corporation to pioneer in another great industry, the pumping of natural gas by pipeline from the great oil fields of the southwest to the cities of the middle west and east. The company organized the Tennessee Gas and Transmission Company to build a 1,265 mile natural gas pipeline from Texas to West Virginia. This was the first major gas pipeline from Texas oil fields. The holdings in the pipeline were sold in 1945 to prevent the company's entire gas and oil operations from being subject to the jurisdiction of the Federal Power Commission. Sale of the pipeline holding for $10,500,000 yielded a profit of about $3,500,000 above cost.

Chicago Corporation's income is now derived primarily from the recovery of motor fuel and other products from natural gas and from the sale of the dry gas to pipeline

operators. Total sales last year were reported at $20,672,996, of which $11,026,849 came from motor fuel, kerosene, butane, etc., $5,438,375 from dry gas, and $4,207,772 from crude oil and field distillates derived from it. Other income, totaled $1,020,875.

Last year the company's gross daily sales of gas increased to 293,155,000 cubic feet from 202,877,000 in 1950. Net daily output of plant products from natural gas totaled 7,672 barrels against 7,386 in 1950, and net daily production of crude oil and field distillates was 4,267 barrels against 3,196.

Oil and gas properties were carried at net cost of $25,507,443 at the close of 1951 after deducting $14,796,773 of reserves for depreciation, depletion and amortization. Producing and undeveloped oil and gas leaseholds, wells and equipment, before reserves, totaled $26,870,164, plants and equipment totaled $10,391,705 and other properties accounted for $3,042,347.

Investments in marketable stocks, once the major asset item, amounted to only $548,598 at the end of 1951, at cost, while other securities, advances, etc., representing stockholdings and loans to various unconsolidated subsidiaries and other companies in which a substantial interest is held, were shown at $8,136,000.

Seek More Property

Chicago Corporation's efforts are now being concentrated on accumulating additional oil and gas properties. Extensive acreages are under lease in the United States and Canada, and the company has built up its staff of geologists to more than 20.

Last year the company and its wholly-owned subsidiary, Gulf Plains Corporation, participated in the drilling of 80 completed wells. Thirty-nine were exploratory tests, and the other 41 were developmental wells. The results of this drilling were 31 producing wells and 49 dry holes. The producing wells consisted of 20 oil wells, including two "dual" wells producing at two different levels; nine gas wells, including three "dual" wells; and two wells producing both oil and gas. The company's own crews and equipment were used in drilling 33 wells. Five offices are now maintained in Texas, one in Colorado, and one in Wyoming, in addition to the headquarters office in Chicago.

At the close of the 1951 year Chicago Corporation had varying interests in 495 producing wells and was the operator of 414 while the remaining 81 were operated by partners. Of these wells 281 were gas wells and the others produced oil.

Lease 400,000 Acres

In addition to its acreage holdings in Texas, the company now has 400,000 acres under lease in the Denver-Julesburg Basin and has opened an office there to direct the work of seismic crews engaged in determining the potential of the field. Chicago Corporation and Republic Natural Gas Company formed an equal partnership in the Denver-Julesburg project.

As a result of exploration and development of new fields, gas reserves have been maintained and oil reserves have increased. Five new fields of "varying" importance were discovered on the 8,800 acre Wardner lease in Nueces County, Texas. The importance of the latter discovery is measured not only by the increase in oil and gas reserves but by the fact that the gas is rich in condensates and will increase plant yields of these products, the company reported.

Net earnings for the year ended December 31, 1951, totaled $4,757,057, equal to $1.34 a share on the common stock after allowing for dividends on the preference stock. Included in the 1951 earnings were capital gains of $891,005 after setting aside $300,000 as a contingent reserve. In 1950 net earnings were $3,896,323, or $1.08 a share on the common, including capital gains of $651,541. Net for 1949 was $4,303,886, or $1.20 a share. Sharply higher federal income tax rates have held down earnings gains. The provision for income taxes was $2,000,000 in 1951, $1,500,000 in 1950, and $1,020,000 in 1949.

Earnings for the first half of 1952 were somewhat higher than in the first six months of 1951, reflecting higher prices received for natural gas. Chicago Corporation's contracts with buyers of natural gas contain an inflation clause which provides

or an increase in the price if the transmission company is granted an increase in rates. This foresight was rewarded with an increase of 15 percent in the prices received from Tennessee Gas Transmission Company this year.

Outstanding capitalization consists of 100,000 shares of convertible preference stock with no par value, 3,324,196 shares of $1 par value common, and $7,113,622 of long-term debt (at the end of 1951) consisting principally of $6,327,534 of notes payable secured by certain oil and gas properties without recourse to other assets.

The preference stock is convertible at any time into common on a share for share basis. It is entitled to cumulative dividends of $3 a share annually, and is redeemable on 60 days' notice at $65 a share plus unpaid dividends. The first dividend on the common stock was paid in 1946. The distribution of 25 cents a share for 1946 was followed by 45 cents in 1947, 50 cents in 1948 and 60 cents in 1949, 1950 and 1951. After a quarterly payment of 15 cents on February 1 of this year, the quarterly rate was increased to 20 cents a share with the distribution made May 1.

Both the preferred and the common stocks are listed on the Midwest Stock Exchange. The common is also listed on the New York Stock Exchange and the Boston Stock Exchange, and is traded on the Los Angeles Stock Exchange.

Here, There and Everywhere

(Continued from page 8)

model, and now absolutely worthless!

• ***Port Improvements***—The American Waterways Operators, Inc., reports that U. S. coastal and inland ports have passed the half-way mark in the biggest port improvement program ever undertaken in the history of water transportation in this country. The trade group adds that more port improvement projects were undertaken this year than ever before, and also more projects are in the planning stage. New York is spending $75 million on its port; Baltimore, $30 million; Philadelphia, more than $4 million; Savannah, $20 million; Boston, $7 million

and Houston, $32 million — among the larger improvement projects.

• ***European Cooperation*** — Chemical and Engineering News reports that the first major postwar example of a joint commercial development between former enemies — Germany and Britain — has reached the hand-shaking stage. Farbwerke Hoechst, one of Germany's largest chemical firms, and United Oxide Ltd., of Great Britain, now are planning to launch a joint manufacturing program in a new plant scheduled for construction in Newcastle, England.

• ***Credit Protection*** — An Allentown, Pa., department store, Hess Brothers, has introduced a method of protecting credit account customers, under which the liquidation of the unpaid balance of any account is insured in the event of a customer's death. The plan also provides for the payment of monthly benefits equal to the payments on the account in the event of disability resulting from illness or accident covered under the provisions of the policy.

• ***Torture Chamber*** — Scientists at the United States Rubber Company report they have built hot and cold "torture chambers" to roast and freeze rubber and plastic aircraft parts up to 600 degrees above zero and down to 80 degrees below zero in their search for better materials to withstand extremes of temperature. Products passing the tests are guaranteed to weather the North Pole, the stratosphere, and the Sahara Desert. They are also designed to resist heat generated by a plane's motors and exhaust.

• ***Super Sub Coming*** — Construction work on the world's first submarine to feature electronic controls instead of conventional pneumatic systems will begin soon at the Portsmouth, N. H., naval shipyards. According to Minneapolis-Honeywell marine engineers who designed the new systems, the electronic controls will be four times as accurate as existing types. They are also said to be more compact, lighter, more shockproof and easier to maintain and repair under battle conditions.

Industrial Developments

. . . in the Chicago Area

INVESTMENTS in industrial plants in the Chicago area totalled $32,237,000 in July compared with $13,826,000 in July, 1951. Total investments for the first seven months of this year were $106,894,000 compared with $233,346,000 during the same period in 1951. These figures include expenditures for the construction of new industrial plants, expansions of existing buildings, and the acquisition of land or buildings for industrial purposes.

• ***Cities Service Oil Company*** will expand its East Chicago refinery by approximately 50 per cent with the addition of a fluid hydro-forming unit for high octane compounds and a crude oil topping unit for splitting crude oil into components. A coke unit at the refinery will also be increased in capacity. The company will combine with other companies to construct a refined products pipeline from the Chicago area to the east.

• ***Martin Oil Company,*** 131st and Kedzie avenue, Blue Island, is expanding its plant on a 100 acre site adjacent to its present unit.

• ***Interlake Iron Corporation*** is expanding its plant at 112th street and the Calumet river by enlarging one of its blast furnaces and extending its ore receiving dock as well as building two new ore unloading bridges. It is also constructing a new unit for the recovery of ammonium sulfate from by-product coke oven operations. The blast furnace that will be enlarged is one of two at the plant and its capacity will be increased from 525 tons daily to 850 tons.

• ***Sunbeam Corporation,*** 5600 W. Roosevelt road, is constructing an addition to one of its units at Central avenue and Roosevelt road. The addition will increase floor area by 160,000 square feet. Sunbeam manufactures household electrical appliances. Olson and Urbain, architects; Campbell-Lowrie-Lautermilch, general contractors.

• ***Kropp Forge Company*** is completing an expansion of its plant in Cicero.

• ***Johnson Motors Division of Outboard,*** Marine and Manufacturing Company, Waukegan, is constructing a large die-casting building on the lakefront adjacent to its plant. The building will contain 80,000 square feet of floor space. Johnson Motors Division produces outboard motors. Eschweiler and Eschweiler, architects; Campbell-Lowrie-Lautermilch, general contractors.

• ***Woodall Industies, Inc.,*** 3500 Oakton avenue, Skokie, is constructing a 50,000 square foot addition to its plant. The company fabricates fibre and plastic products. Bruce A. Gordon, architect.

• ***Aurora Equipment Company,*** Aurora, manufacturer of industrial steel shelving and warehouse equipment, is constructing a 40,000 square foot building adjacent to its present plant. Johnson and Johnson, architects.

• ***Standard Transformer Corporation,*** 3580 N. Elston avenue, is constructing two additional buildings at its present plant. The company manufactures radio, television, sound and electronic components.

• ***Firth Sterling Steel and Carbide*** Corporation, Pittsburgh, is starting construction of a 13,000 square foot warehouse in Melrose

Park. The company produces steel bars and forgings and other semi-finished steel products.

• ***Austin Sheet Metal Works,*** 5109 W. Chicago avenue, is building a 16,000 square foot plant at Iowa and Cicero avenues. The company manufactures heating and air-conditioning equipment Ragnar Benson, Inc., general contractor.

• ***Quick-Set, Inc.,*** 1322 N. Elston avenue, is constructing a plant at 8109 N. Central Park avenue, Skokie. The plant will contain approximately 16,000 square feet of floor area. The company makes photographic apparatus.

• ***Lith-O-Ware Products,*** 2350 S. Ashland avenue, is consolidating all of its Chicago area operations in a building at 4610 W. 21st street, which it purchased recently. The company makes metal housewares, premiums and specialty items. Browne and Storch, broker.

• ***Erickson Electric Equipment*** Company, 3645 N. Elston avenue, is building a plant at 4460 N. Elston avenue, which will contain 6,000 square feet of floor area. The company manufactures electrical equipment, panelboards, switchboards and pull boxes.

• ***Jaybill Manufacturing Company,*** 7116 W. Touhy avenue, Niles, is constructing a 5,000 square foot addition to its plant.

• ***Western Felt Works,*** 4115 W. Ogden avenue, is expanding its plant by 25,000 square feet of floor area. Robert Nerem, engineer.

• ***Federal Tool Company,*** Lincolnwood, is constructing a 22,000 square foot addition to its plant. Campbell-Lowrie-Lautermilch, general contractor; Shaw, Metz and Dolio, architects.

• ***Sunkist Food Company,*** 2452 W. North avenue, is building a 5,000 square foot plant in Evanston.

• ***Engraved Products Company,*** 3817 N. Lincoln avenue, is constructing a plant in Skokie. The company does engraving and graduating for other manufacturers of dials, scales, name plates, beakers etc.

• ***Cadillac Plastics Company,*** Detroit, has acquired a three-story building at 725 W. Lake street containing 18,000 square feet of floor area. Willoughby and Company and McKey and Poague, brokers.

• ***George B. Carpenter and Company,*** jobber and distributor of cotton duck, rope and twine in Chicago and the middle west since 1840, has completed moving to its new location at 401 N. Ogden avenue. Its new quarters, consisting of approximately 55,000 square feet have been extensively remodeled.

Ceramics

(Continued from page 17)

carbon steel in exhaust systems of airplanes and other vehicles.

Outstanding features of the new coating, known as A-19, were (a) high resistance to chipping under repeated severe thermal shock, (b) protection of the metal against oxidation during prolonged exposure in air at temperatures up to about 1250° F, (c) freedom from cracking and blistering that would occur in conventional porcelains under high temperatures and severe thermal gradients, and (d) a mat surface that did not reflect highlights.

In 1945 the National Advisory Committee for Aeronautics joined forces with the National Bureau of Standards to develop materials that would lengthen the life of the high alloys used in aircraft. Out of this partnership came several new coatings, the most widely used being the A-417. In one laboratory test, Inconel coated with A-417 withstood 500 hours at 1650°F in air.

Other coatings reported by NBS last Fall included one that appeared to have "value for high-temperature protection of molybdenum," a metal subject to severe oxidation at high temperatures. Another coating, L6AC, was reported to be successful as an adhesive for mounting strain gages for high temperature strain observations.

The A-417 coating brought out a new problem: It was unsuitable for low-carbon steels because the application of the coating required that it be fired by heating to 1850° for

ree to ten minutes, a heat that uld produce excessive distortion d warpage on all but the simplest apes of low carbon steel. This inted up the need for the delopment of a method for applyg protective coatings to the baser etals at lower temperature—a oblem that science already has parently solved.

Solar Aircraft Company, which egan experimenting with ceramic atings in 1943 when the Air Matel Command placed an order for e manufacture and coating of five on manifolds, has made important ntributions to the new science, ut it was not until January, 1951, hat the company's "Solaramic Proc-ss" was developed to the point here it could meet all requirements for military use.

Solar has reported amazing results rom the use of its coatings. In one nstance when it became necessary o increase the operating temperature of a certain jet engine compoent by 100°F the life of the comonent was reduced to 20 minutes rom 300 hours. A ceramic coating estored the part to its original ervice life even at the higher temperature. Combustion chamber liners for jet engines, formerly produced from an alloy of 78 per cent nickel, and with a rated life of 200 hours, are now turned out by Solar from a cheaper ceramic coated stainless steel containing only eight per cent nickel but with a life equal to that of the high alloy product.

Solar Pilot Plant

Last September Solar opened a pilot plant in San Diego to apply ceramic coatings to aircraft parts and other products. The aircraft parts include components for jet and piston engines, ramjets, rockets, helicopters, and airframes. Some of these parts, such as turbosupercharger nozzle boxes, combustion chamber liners and turbo hood assemblies are in volume production. The company is also doing ceramic coating work for industrial firms, including Union Oil Company of California, Sun Oil, Petro-Chem Development Company, Standard Oil Development Company, Minneapolis-Honeywell, Hooker Electrochemical, DuPont, Dow Chemical, and Champion Spark Plug Company. The company reports that its coating can be used to protect metal sheet only .001 inch in thickness. The company reports also that the coating covers all types of welds and various materials and alloys in different thickness gages used in the manufacture of a single part.

Ryan Aeronautical Corporation was using ceramic coatings on aircraft parts before the National Bureau of Standards developed its high temperature materials. In 1944 the company coated more than 500 Douglas A-20 attack bomber exhaust systems with heavy porcelain enamel as a means of saving stainless steel. Subsequently Ryan began active tests with the A-417 coating. After nearly 3,000 miles of actual flight use in Boeing Stratocruisers on Pan American's transPacific runs, ceramic coated "headers" are still unharmed. These headers are the portions of the manifold bolting directly to the cylinder heads of the huge engines used on the Stratocruisers. The increase in the size of the engines now in common use as compared with those in World War II has sharply increased the need

for improving heat resistance and checking corrosion from the exhaust gases.

Curently Ryan Aeronautical is using an improved NBS coating, A-418, to which the company has added some improvements of its own to develop "A-418-Ryanco-C," designed to perform under continuous temperature of 1800°F and to withstand thermal shocks encountered in exhaust systems between −70° and 1700°F.

Ryan is now producing coated parts in volume for the aircraft industry, including parts for jet aircraft. The company is also producing in volume coated parts for the engines powering the new General Patton tanks.

Many Doing Research

A vast amount of research into ceramic coatings is going on in the laboratories of such institutions as Ohio State University, the University of Illinois, Armour Research Foundation of Illinois Institute of Technology, Massachusetts Institute of Technology, California Institute of Technology, Battelle Memorial Institute, Rutgers, and others. Only a small percentage of this research involves duplication of effort, according to scientists who are keeping in close touch with the subject.

One of the most interesting and productive research programs is going on at the Armour Research Foundation in Chicago under the sponsorship of the military and various manufacturers. The scientists at Armour are concentrating on the crystal chemistry approach to learn more about the nature of solids. Some of the knowledge already obtained may extend the horizons for ceramic coatings far beyond anything contemplated only a few months ago.

Interatomic Diffusion

The Armour researchers have found methods of bringing about solid to solid reactions, or interatomic diffusion, at lower temperatures. The process, which is described as skirting close to catalysis, may be the answer to the problem created by the fact that glass and a glassy ceramic coating must be fused to metal at a high temperature which may ruin the metal.

The scientists have also started to design new inorganic materials according to the characteristics desired in a coating. Literally hundreds of different glazes and other coating materials have been developed.

New techniques of applying ceramic coatings are also being discovered at Armour Research Foundation, indicating the possibility that a satisfactory bond will be achieved between the coating and the metal without the use of high temperatures. A vapor deposition method is one that is being investigated exhaustively. It is not inco ceivable, the researchers say, that ceramic coating could be put wood.

Not all the research activity ceramics at Armour is on this hig level. In fact, Armour combines esoteric scientific investigations wi investigations into the practic problems of the plumbing wa manufacturer.

Because of this somewhat uniqu concern with both the practical ar the purely scientific, Armour scie tists have a broad insight into t possibilities of ceramic coating They foresee many applications tha will bring benefits to the consume directly or indirectly. Industria production will be aided by ceram protection to thermocouples, to fu naces, to turbine blades, to indu tion coils, and so on. It may b possible to make permanent moul by using ceramic coatings that wi prevent the sticking or welding c molten metals.

Everyday Uses

Protection of automobile spar plug electrodes from the corrodin effect of high temperature may b achieved by a ceramic coating Mufflers and tail pipes that rust ou all too soon because of moistur condensation can be protected cer amically, and some manufacturer are said to be ready to give thei cars this protection. A ceramic glaze, appropriately colored, coul take the place of the customary paint job on the automobile body In the automobile engine, greater efficiency could be achieved if high er operating temperatures are made possible by the ceramic coating o such hot parts as valves, pistons and cylinders. In the home the possible applications include protection o ovens, stove burners, and furnace interiors.

Stewart-Warner Corporation an nounced a few weeks ago a sub stantial price reduction and an im provement in the construction of two models of its "Safety Sealed" gas wall heaters through the use of ceramic coating. The company switched from cast aluminum combustion chambers to ceramic coated heavy gage steel, a change described as "basic and beneficial."

The current technique in ceramic coating begins with the preparation

(Continued on page 47)

Transportation and Traffic

THE Interstate Commerce Commission has suspended the proposed cancellation of free pick-up and delivery service by official territory railroads. The matter has been assigned for investigation under I. & S. Docket No. 6013, Pick-up and Delivery Charges in Official Territory, and hearings will be held September 4, 1952, in New York, and September 8, 1952, at the U. S. Customs House, 610 S. Canal street, Chicago, before I.C.C. Examiner Witters. Under provisions of tariffs filed to become effective June 23, 1952, specific charges ranging from 10 cents to 35 cents per 100 pounds would be assessed for pick-up and delivery service performed in official territory. The Chicago Association of Commerce and Industry was among those requesting the Commission to suspend the tariffs pending an investigation into the justness, reasonableness and lawfulness of the proposed charges. The Association's petition pointed out that the cancellation of free pick-up and delivery service would result in many instances where the charges on shipments from Chicago into official territory would be considerably higher than would be applicable for considerably longer hauls from points north and west of Chicago. The railroads have now petitioned the Interstate Commerce Commission to vacate the suspension order in this proceeding and permit the suspended pick-up and delivery charges to become effective "forthwith," subject to later investigation if that appears "necessary and desirable to demonstrate conclusively the lawfulness of the charges."

• ***Boost in 3rd Class Mail Rates*** Effective July 1: The increases in third class mail rates authorized under Public Law 233 will become effective July 1, 1952. On circulars, printed matter and merchandise the bulk pound rate of 14 cents per pound will not be changed but the minimum charge per piece will be increased to 1½ cents. There will be no change in the single piece rate of 2 cents for the first two ounces and one cent for each additional ounce. The minimum charge per piece on books, catalogs, seeds, plants, etc., mailed under the bulk pound rate of 10 cents per pound, will be increased to 1½ cents. There will be no change in rates on mailings by religious, educational, scientific, philanthropic, agricultural, labor, veterans or fraternal organizations.

• ***Chicago Police to Enforce New*** Truck Parking Ban: The Committee on Motor Truck Terminals of the City of Chicago has advised that the police department is developing plans for the enforcement of an ordinance prohibiting the parking on city streets of trucks, truck combinations or buses for a longer period than one hour, or for such time as is necessary for the reasonably expeditious loading or unloading of such vehicle. The ordinance authorizes the police to remove illegally parked or abandoned vehicles and the fee for redemption of such trucks will be $20.00 plus $1.00 for each day or fraction thereof.

• ***I. C. C. Suspends $1.50 sur-*** charge on Motor Carrier Shipments to Southeast: On July 3, 1952 the Interstate Commerce Commission voted to suspend the $1.50 surcharge on shipments under 5,000 pounds published in Central and Southern Motor Freight Tariff Association Tariff No. 1-E to become effective Monday, July 7, 1952. The North-South Standing Rate Committee also considered at hearings on July

16 at Louisville, Kentucky, two other dockets involving increases in rates. Docket 3999 proposes an increase of 15 per cent in all class rates and exception rates named in Tariff 1-E in lieu of the presently applicable six per cent increase. Docket 4000 would amend Central and Southern tariffs by adding a flat arbitrary of 20 cents per 100 pounds to all shipments weighing less than 5,000 pounds which are subject to less truckload or any-quantity rates. Carriers state that the latter increase is proposed in view of the suspension of the $1.50 per shipment surcharge.

• ***Canadian Government Permits*** United States Trucks to Cross Niagara Peninsula with Goods in Bond: On June 27 the provincial government of Ontario signed an order by which U. S. trucks may, for the first time in six and one-half years, cross the Niagara Peninsula of Ontario carrying goods in bond between the cities of Windsor and Sarnia, Ontario, and the cities of Buffalo and Niagara Falls, New York. During the war this practice was permitted on a limited basis, but such privilege expired on December 31, 1945. D.T.A. head James K. Knudson commended the action of Ontario officials, stating that it will be of tremendous assistance to the defense transport effort in the economy of man-hours, motor fuel and the use of essential equipment.

• ***Postmaster General Asks I.C.C.*** Consent to Boost Parcel Post Rates: Postmaster General Donaldson has petitioned the Interstate Commerce Commission to consent to such increases in 4th class (parcel post) mail rates as may be necessary to assure revenues sufficient to pay the cost of the service. An analysis of costs for fourth class mail and supporting data will be presented to the commission on or about January 1, 1953. The Supplemental Appropriation Act of 1951 requires the Postmaster General to certify in writing that he has asked the Commission to consent to rates on fourth class mail sufficient to pay the cost of that service before he can obtain any of the funds appropriated to his department. While the filing of the petition at this time necessary in order for the Post Office Department to withdraw mo from the Treasury, the departm stated that such a request wo eventually have to be filed beca of rising costs.

• ***New Airline Reservation P*** cedure in Effect: A new reservat procedure of the scheduled ce ficated airlines became effective J 1. It requires the holder of reser tions to notify the airline at le six hours before flight depart time of definite intention to use space held. Such notification m be made at any city during the t where the holder of reservati may remain 12 hours or longer at the city where the trip beg when no local telephone contact been given to the airline. Reser tions not reconfirmed may be s ject to cancellation. The procedu is to eliminate "no shows"—th who never show up to use reserv space, yet fail to cancel.

• ***A. A. R. to Expand Resear*** Facilities: The board of direct of the Association of American R roads has authorized construction another building costing appro mately $350,000 at the A.A.R. C tral Research Laboratory at the I nois Institute of Technology in C cago. The newly authorized bui ing will be devoted entirely to wo ing laboratory space, with admin trative offices remaining in the pr ent Central Laboratory. William Faricy, A.A.R. president, declar that "the additional space will n only expand facilities vitally need for research projects, but also w speed up the tempo of present e perimentation."

Next Half-Century

(*Continued from page 14*)

greater number of trained scientis and technicians. Our principa training grounds—our scientif schools—must turn out more, bett equipped men.

We must tap our richest resourc —the nation's young but unuse brainpower. Despite the widenin of educational opportunity, only million men and women in Ame ica today are college graduate Only about 600,000 people const

e our nation's scientific and en-eering manpower.

Millions of young men never get ond high school. (The figures : one-third of high school gradu-s enter college; two-thirds do). Yet every study made indi-es the extraordinary waste in in-ectual potential that this entails. e President's Committee on gher Education a short time ago d: "At least as many young peo-having the same, or greater in-lience, are outside college as are hin."

We must, it seems to me, do erything we can to interest, at-ct and help finance when needed, re young men of high capacity enter upon scientific and techni-l careers.

We must create far more under-nding about our economic sys-m. We must engender understand-g on how it functions, and the ofound stake we all have—and e world has—in its preservation, pansion and extension.

These things strike me as impera-ve.

For the pre-requisities to produc-vity that I have cited are the very asons for the existence of institu-ons such as Illinois Tech.

Custodians of Future

In the keeping of Illinois Tech nd its sister institutions lies much the nation's future advance in asic knowledge, in application in chnological forms, in the training scientific personnel, and in help-ng further a real comprehension the way America ticks.

Much of what we already know an be found somewhere in books, chnical journals and scientific apers.

What we do not know, but must nd out, is still locked up in the eads of those now in institutions uch as Illinois Tech, and in the oung men in the generations to ome who will follow them.

Fortunately in the United States ve have no great state-imposed plan ither for education or anything lse. We do have planning, how-ver, where it counts most in a free ociety—in the private institutions f learning and in private industry.

As a private institution, Illinois Tech has drawn up an inspiring et of plans for its future. They re aimed at rendering the greatest possible service to business and industry . . . in this area . . . and far beyond. Over a half century ago in 1892 in Chicago here, the Commissioner for the World's Fair, Daniel Burnham, made a statement that, as I look ahead, has perhaps more meaning for our time and the future of our institution than when he uttered it a half century ago. He said: "Make no little plans. They have no magic to stir men's blood, and probably themselves will not be realized. Make big plans. Aim high in hope and work, remembering that a noble plan, once recorded will never die, but long after we are gone will still be a living thing, asserting itself with ever-growing insistency."

Plans like that are the only kind with which we can meet the tremendous challenge of the future. With properly trained people, motivated by high aims, it can done. The real answer to making a fuller life for 50 million more citizens is that it can be done because it must be done. This nation has risen to challenges as great as this one in the past; I am convinced that we can do it in the future.

New Products

Portable De-Magnetizer

A portable de-magnetizer, about the size of the average hair massager, which is said to de-magnetize tools, dies, parts, and other pieces when it is passed slowly over their surface has been introduced by Enco Manufacturing Company, 4520 W. Fullerton Ave., Chicago 39. Called the "Miti-Mite" De-Magnetizer, the instrument has a base of molded plastic in the bottom of which are three poles of laminated silicon steel, flush with the bottom surface. The device plugs into any 100-volt A.C. outlet.

Canny Golf Ball

United States Rubber Company, New York 20, N. Y., says it has a new practice golf ball that is so sensitive to the way it is hit that it indicates to the golfer a hook, a slice or any other faulty swing which can be corrected with practice. Made of cellular plastic containing thousands of non-connecting gas cells, the ball is thus 90 per cent gas. It is very light and with a good drive travels only a little over 100 feet .

Tile-Concrete Bond

Pioneer Latex and Chemical Company, Middlesex, N. J., has developed a chemically-set adhesive, called "Chem-Set," which it says can be used to cement rubber tile on grade concrete. According to the manufacturer, the adhesive provides an effective bond between rubber tile and cement, even in the continuous presence of moisture.

New Lifeboat

A rubber lifeboat that inflates in 30 seconds and provides 70-degree protection for up to 15 survivors in either sub-zero or blistering tropical heat has developed by the Navy and the B. F. Goodrich Company, New York, N. Y. Deflated, the boat fits into a carrying case about the size of a small steamer trunk and it can be lowered from a helicopter or thrown overboard from a ship. When a release cable is pulled by the first person reaching the boat in the water, carbon dioxide gas snaps the 230-pound craft out of carrying case and inflation automatically follows.

Anti-Rust Device

Call Boy Company, 7147 Lynd Ave., Minneapolis, Minn., is m keting a device called "Protec Plate," which is a magnesium that hangs inside an auto radia to neutralize rust formation in cooling system. As the magnesi is eaten away by the oxygen in water, a chemical protective film formed on the inside on the syste Call Boy says one "Precto-Pla lasts six months to a year.

For Small Taps

A new finger tip control tappi chuck said to provide extreme s sitivity and precise control of sm taps in high volume producti work has been introduced by t Commander Manufacturing Co pany, 4225 W. Kinzie St., Chica Employing a unique drive eng ing collar, a 1/8th turn of which e gages or disengages the tap from t driving mechanism, the new chu is said to permit an operator "feel" the tap as it enters or leav the work.

Illuminated Magnifier

An electrically lighted magnifi designed for general industrial u has been developed by Bausch ar Lomb Optical Company, Rochest N. Y. The device is equipped wi either of two types of illuminat handles, one battery-powered, t other for connection with a 11 volt power source. Either hand fits a reflector-type shade into whic the magnifier snaps.

Heavy Duty Centerer

Extra heavy duty automatic ce tering reels in five, 10 and 20 to capacities have been placed on t market by the F. J. Littell Machin Company, 4127 Ravenswood Ave Chicago 13. The reels have h draulically expanded arms whic are contracted and expanded by h draulic actuated cams within t spindle. As the spindle sleeve pushed forward, the arms contra

nd as the sleeve is pulled toward he frame, the arms spread until he coil is gripped tightly.

refab Door Frame

Jay G. McKenna, Inc., Elkhart, nd., has introduced a prefabricated rame for sliding doors which it says an be installed in less than a half our. The unit comes with a track ssembled with hangers in place.

/hite Mercury Light

Westinghouse Electric Corporaion's Lamp Division believes the amiliar blue-green tint given off by onventional mercury lighting in lants and factories may soon be a hing of the past. The Lamp Divi-ion has come up with a 1000-watt uorescent mercury lamp, which it ays gives off a "golden white" light, t the same time retaining all the conomy features of conventional ercury lighting. Westinghouse's amp Division is at Bloomfield, N. J.

oor Draft Seal

A long metal device which ataches to the bottom of a door to eep out drafts, insects, dust, dampness, and noises has been placed on the market by Sentry Stop-A-Draft Company, 20 N. Wacker Drive, Chicago 6. The two-inch high metal casing comes with a metal channel strike plate in the same length. When a button is depressed in the casing that fits to the door, a strip of heavy weather-proofed insulating felt drops down inside the hollow metal to make a positive door-to-floor seal.

Blind Cleaner

A venetian blind cleaning tool that washes, rinses or waxes both sides of a slat simultaneously in one quick stroke has been introduced by Cardograms, 2449 W. Fullerton Ave., Chicago 47. Made of plastic, the tong-like handle of the tool fans out into two facing triangles which are padded on the inside with ⅜-inch thick Airfoam.

Trends In Finance and Business

(Continued from page 11)

per cent—"a record which will stand comparison anywhere."

The bank economist pointed out that Canada's greatest increases have been in natural resource development and in industry. Aluminum production is more than five times prewar, oil production is up even more and steel output is 2¼ times the 1939 level. The pulp and paper industry has increased significantly and, despite a loss of farm workers to Canadian cities, some 20 per cent less workers are producing 30 to 40 per cent more farm products.

Two of the most important factors in the dominion's rapid industrialization, according to Economist Gibson, have been the tremendous U. S. demand for basic materials as well as the availability of U. S. capital to develop major resources—notably pulp and paper, metal and oil reserves.

• ***Steel to the South***—While this country has been suffering the effects of a crippling steel strike, its Latin American neighbors have been slowly increasing their steel output—although it is still only a drop in the ladle compared with U. S. production, with or without a strike. The American Iron and Steel

Institute notes that Latin American last year produced a record total of more than 1.6 million tons of steel, according to published reports. That output reflects the results of expansion programs which are scheduled to almost double production and add one new Latin American steelmaking nation—Peru.

Of the seven Latin American countries with steelmaking furnaces, Brazil has by far the largest industry. The plant at Volta Redonda is the biggest in South America. Brazil and Chile are the only South American countries with full integrated plants, having blast furnaces to supply iron for steelmaking. Brazil is estimated to have produced 900,000 tons of ingots in 1951 and Chile about 200,000 tons. Argentina has modern furnaces in two cities, and Colombia, Uruguay and Venezuela have electric furnaces which operate on scrap to supply steel for the rolling of concrete reinforcing bars.

Success Story

(Continued from page 19)

home the fundamental text: "The more doorbells you push, the more books you sell!" One concern says its records indicate that one out of every five people who listen to its salesmen wind up signing an order.

Then there is the matter of "careful coaching," as the encyclopedia firms like to call it, or as it is less elegantly referred to—"the super-canned-pitch." Salesmen are told precisely how to behave, precisely what to say from the moment they step to the prospect's door until the sale is closed. The instructions are scientifically so near perfect that, if followed, almost everyone will buy—at least, that is the claim.

The World Book training manual, which is typical of those generally used, begins with front porch behavior.

"An experienced World Booker usually has a distinctive ring," the manual declares. "Possibly, a short ring and then a long one. Yours is not an ordinary call, and it is by no means a timid approach. If there is no bell, a brisk cheery knock on the door is the next best thing."

While waiting, take several deep breaths and step "at least one full-size step back from the door," the manual advises. "You should be standing on the side directly in front of the door now so that the door must be opened fully in order to see you."

Calling the prospect by name is important. "Be sure you have the prospect's name right and that you pronounce it correctly," the manual continues. "Then call the prospect by name at least eight or ten times during your demonstration. It's so easy to call her 'Mrs. Brown' at the door and then forget to ever say 'Mrs. Brown' again during the demonstration. Remember that she likes to hear her name and she likes to hear the names of her children."

Nothing is overlooked in the instructions. "Some salespeople will sit side by side on the davenport with their prospects," the manual points out, tactfully adding, "as a general thing, it is more convenient to place your chair in front and a little bit to your right of the prospect while facing her."

Price Resistance

Encyclopedia salesmen must, of course, overcome price resistance against a product that usually sells for at least $100 or more. A cloth-bound World Book set costs $109. The biggest-selling edition of the Britannica costs $298, although a luxury edition in Morocco leather is priced at $1,200. Salesmen get over the price jump by first convincing their prospects that they're getting a product of tremendous value. World Book salesmen trot out such impressive statistics as the 10,000 pages the set contains and its 18,000 illustrations, culled from a million pictures. He'll talk about the 1,450 contributors and the eight librarians that toiled a year and one-half just to insure proper cross-references. Then he will attempt to show how it's practically impossible to get along without a set—say with the familiar old "spoon and shovel" pitch.

It runs like this: "If you had a contest to see whether your child could dig a ditch as fast as your neighbor's child, and your child had a spoon and he had a shovel, it wouldn't be fair, would it? And so many children have the advantage of having these great tools . . . (pointing, naturally, to the vast array of knowledge spread before the prospect)".

Finally, the salesman winds up by dividing the cost of the set, over a period of years, into such an intriguingly tiny amount per day that the most penny-pinching prospect flinches at the thought of denying his offspring such a trivial benefaction. The World Book clincher is typical:

"You can use the budget plan or

n down and six a month (the ugly rd "dollar" is unmentionable). hat is only 20 cents a day — the ice of a quart of milk or a pack- e of cigarets."

Encyclopedia firms help their esmen in an astonishing variety ways. They attempt to create a mand on the part of parents by oviding schools with teaching aids sed on their encyclopedias.* eachers, in turn, assign work that volves looking up material in a erence book. If they can sell the hool on using their sets, the chil- en get used to these books. Then s apple pie simple to get the rents to buy.

Overcrowded schools have been boon to the encyclopedia indus- y, for they have meant less class- om study and more home study. ften this means a child can't get cess to school copies of an ency- opedia, and of course salesmen um home the idea that having ferences in your living room is sential these days.

Sales Gimmicks

Salesmen have gimmicks galore, d often they are the straw that os the balance in favor of a fast le. The "question-asking privi- ge" gives the customer the feeling 's getting a little extra for his oney. American Peoples Encyclo- edia purchasers can ask 100 ques- ons any time during the next ten ars, a privilege that has sent their reless researchers seeking the an- vers to such inquiries as "Do gir- fes have adams' apples all the way own?"

Or a salesman may be armed with dictionary, an atlas, a bookcase to the encyclopedia or even a piggy ank in which a customer can save is nickels and dimes to meet the onthly payments. Such items are sually offered at "special prices."

The publishers have also helped heir salesmen by improving their roducts. Today's books are much asier to read than those of a few ears ago. Britannica Junior in- reased its type size 20 per cent in 1947 to improve readability. World Book claims its explanation of relativity has been distilled to such simple terms that a high school student can comprehend it without so much as looking up one word in the dictionary.

Sears Roebuck figures encyclopedia readers are more interested in science and technology than in classical subjects, so it has expanded its coverage of such things as jet planes and atomic energy. Britannica Senior now contains 39 million words, four million more than in 1929. Pictures have been increased 10 per cent.

Most present-day encyclopedias are kept right up to the minute. Compton's, for example, will record King George VI's death last February in the books coming off the press next month. This edition will also have a biography of Queen Elizabeth, and all references to Queen Elizabeth will have been changed to Elizabeth I. Even "God Save the King" will be changed to "God Save the Queen."

Encyclopedias differ among them-

*Note: The federal government has aken exception to the "school sponsor- nip" angle in encyclopedia selling. Last onth, the federal trade commission is- ued an order forbidding a major pub- sher from implying that its books are ponsored by schools when such sponsor- nip has actually not been authorized.

SUBCONTRACT WORK WANTED

ves as to who fathered their prod- t but Aristotle, who died in 322 C., and Pliny (23-79 AD) are usual- credited with putting together e first of these collections of arti- s on the world's knowledge. Since at time, they've appeared in most nguages and have ranged in size om a 5,020 volume Chinese ency- opedia down to the one volume orks. The more comprehensive rrent encyclopedias include arti- es by thousands of authorities.

Encyclopedias vary widely in what ey think should be included mong the subjects covered. Britan- ca Junior has eliminated most iry tales; Childcraft is made up rgely of this type of material. ompton's claims its encyclopedia as articles that will teach you how drive a car and build a model rplane; World Book, which em- asizes utilitarian value, alleges at a Mr. and Mrs. George H. rnold of Chattanooga, Tenn., used s encyclopedia as their sole guide building a five room house.

Speed Up Handling

(Continued from page 22)

iliarity with the entire field. Here, brief, is a guide to this vast new eld.

These general points should be nsidered in investigating equip- ent needs: Physical conditions of e operation (such as plant layout, uildings, types of materials han- led); dollar-and-cents measure of turn for equipment investment; st of repairs and availability of eplacement parts; hazards and safe- y features; whether the equipment ermits using gravity; standardiza- on for interchangeability with quipment already in service.

In view of changes in models and onstant improvements in opera- ional sequence, it is wise to com- ine, wherever possible, standard quipment and special-purpose at- achments, rather than buy special quipment that may become out- oded.

Handling equipment should be nalyzed further according to these actors: Class of apparatus (cranes, oists, conveyors, lift trucks, etc.); ature of service performed (lifting, ransporting, etc.); nature of ma- erials handled (loose, bulk, pieces, arts, packages, bundles, boxes, tc.); major field of industry served (mining, manufacturing, transportation, construction, etc.); relative mobility of equipment (fixed path, travel in limited area, travel over wide area).

There are two general categories of handling equipment, hand-operated and self-propelled. Even in highly mechanized systems hand equipment is required for some operations, such as unloading cars and trucks that are not accessible for power equipment. Hand-operating equipment includes the two-wheel hand truck, two-wheel barrow truck, hand platform truck, hand lift truck and skid, hand pallet truck, and power-driven hand pallet truck. Related equipment includes the box truck, four-wheel dolly and trailer hauled by power tractor.

Self-propelled industrial trucks include fork trucks, elevating platform trucks, straight platform trucks and cranes. They may be gasoline powered, electric powered or a combination of the two. Self-propelled trucks should be purchased only after these factors have been considered. Whether the operation will be in an enclosed area like a refrigerator or ship's hold, or near flammables or explosives; the travel distance for equipment; whether ramps are involved; the condition and capacity of floor surface; the size of doors and operating aisles; the tonnage to be handled and the speed required; the initial financial outlay; repairs and maintenance required, the cost of electricity for charging; the cost of gasoline and oil; and whether equipment is to be used outdoors or indoors.

Conveyors may be divided into five groups—package, bulk material, pneumatic tube, gravity, and assembly or production line conveyors. Still another type of equip-

Advertisers' Index

Agencies listed in italics

ment are hand, air and elect
hoists. No block and tackle is,
cidentally, considered a hoist. Cra
include the jib or floor-operat
overhead type and the cage-operat
monorail bridge, gantry and c
types. Other kinds of transporti
devices that can be called materi
handling equipment include whe
barrows, railroad equipment, aer
tramways, pipe lines and pumps.

This summary of the varieties
handling equipment gives some id
of the vastness of the field. T
most efficient handling results or
when exactly the right equipme
is selected and then used in t
right manner.

Procedure

How can management best ta
advantage of the benefit availab
through modern materials handli
equipment and methods? A nec
sary first step is to assign respon
bility for materials handling, f
example, to a materials handli
department or committee.

It is also advisable to acquire th
professional guidance of a materia
handling engineer. One widely us
solution is to have an outside m
terials handling consultant wo
with a company group. The be
place to start looking for a mat
rials handling engineer is the Ch
cago office of the American Mat
rial Handling Society, 53 W. Jac
son boulevard (WE 9-0797). The
will be glad to put any company o
the track of a qualified authority.

A materials handling progra
should not overlook the practic
experience of those who have bee
working in the plant. At the sam
time, the program should provid
training to acquaint plant perso
nel with the principles and too
of modern materials handling.

Certain plant personnel shoul
be encouraged to sharpen up the
knowledge of materials handling
They can become active in mat
rials handling organizations, an
they can take full-time or part-tim
courses in the subject at such schoo
as Fenn College in Cleveland, th
University of Pittsburgh, Wayn
University in Detroit, the Illino
Institute of Technology in Chicag
the University of Washington i
Seattle, Michigan State College i
Lansing, and the University of Wis
consin in Madison.

Educational material can also b

btained from the American Ma-rial Handling Society and the Ma-rial Handling Institute through he former's national offices at 638 hillips, Toledo, Ohio. In addition, anufacturers of materials handling quipment supply extensive litera-ire on their products and some ffer free consulting services.

Even with some notion of the po-ntial of a modern materials han-ling program for his own factory, he manufacturer who starts such a rogram is likely to be surprised at ow far-reaching it can be. Some ndustries are undergoing virtual evolutions in their operations be-ause of a new materials handling pproach.

Manufacturers have paid for new andling equipment in as short a eriod as two to three months, hich is no more than an early eginning of continual savings in perating costs. In today's high-cost, eenly competitive economy, no ompany can afford not to pare andling costs with an up-to-date nd forward-looking materials han-ling program.

Ceramics

(Continued from page 36)

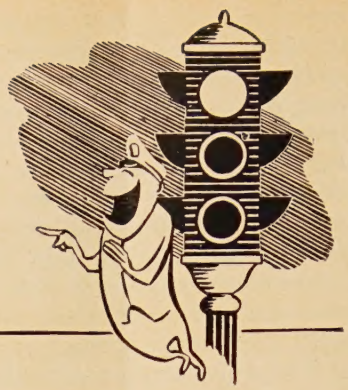
f a mixture of metal oxides and uxing agents. The A-417 coating f the National Bureau of Stand-rds, for example, is made up of a ixture of flint, barium carbonate, oric acid, calcium carbonate, beryl-ium oxide and zinc oxide. These aterials are smelted for several ours at 2425°F, and the molten ass is then poured slowly into ater. This quenching shatters the olten material into small glassy agments called frit. The frit is ried and then ground in a ball ill together with a mixture of hromic oxide, enameler's clay, and ater. The resulting fine water uspension is known as a "slip," and t is applied as a coating either by ipping or spraying. The coated art is dried, and then is fired by eating it at 1850°F for three to en minutes (the Solaramic Process alls for firing at 1500 to 2000°F for en to 30 minutes, depending on the ize and nature of the part). The inal coating is between 0.001 and .002 inch thick.

In addition to the ceramic coat-ngs, researchers have developed new materials, called ceramals, or cermets, made up of ceramic and metal materials. These ceramals have extraordinary resistance under severe operating conditions and are being used in jet turbine blades. Although the ceramals are combinations of ceramic and metal materials to begin with, they too are made more resistant to heat, oxidation and corrosion when protected with a ceramic coating.

The story of ceramic coatings can be summed up as another example of man improving on nature. The metals now recognized as having superior qualities of resistance to the destructive forces of heat, oxidation and corrosion, protect themselves with a thin coating of oxide. Man-made ceramic formulas utilizing metallic oxides are vastly superior.

The conserving of not only the scarce metals but the more plentiful ones as well with ceramic coatings is another item of proof for those who contend that the rapid strides of science will overcome the threat of exhausted natural resources.

Stop me...If...



The new recruit was finding his first day of training very rugged. Having puffed through the obstacle course to the last lap he fell in getting over the last hurdle. The officer in charge, noticing the man on the ground, asked what was the matter.

"My leg, sir," groaned the man. "I think I broke it on that last hurdle."

"Well, then, don't waste time just lying there — do push ups until the medics get here."

•

Mother: "Daughter, before you get serious with that boy friend of yours, be sure he is always kind and considerate.

Daughter: "Oh, I'm sure of that, mother. Why, only the other day he told me that he put his shirt on a horse that was scratched."

•

Two old coon hunters were swapping tall stories about their dogs. "Why," said one of them, "I had a yaller hound once and every time just before I went hunting I'd whittle out a board in the shape of a coon hide stretcher, just to show him the size of the one I wanted, then I'd set it outside where he could see it. Well, sir, one day my wife set the ironin' board outside and that critter ain't come back yet!"

•

Father: "Mabel, that young man of yours stays too late when he calls. Hasn't your mother something to say to you about that?"

Mabel: "Yes, father — mother says men haven't changed a bit."

•

Minister — "Jackie, do you say your prayers every night?"

Jackie — "No, sir. Some nights I don't want anything."

•

Mother, examining toy: "Isn't this rather complicated for a small child?"

Clerk: "It's an educational toy, Madam, designed to adjust a child to live in the world today. Any way he puts it together it's wrong."

•

Mary: "I've bought you a beautiful surprise for your birthday — it has just arrived."

Bill: "I am curious to see it."

Mary: "Wait a minute and I will put it on."

Officer: "Slow down that truck, Sam. Haven't you got a governor on it?"

Driver: "Nawsah, boss. The governor is in the state capitol. That's fertilizer you smells."

•

The mental patient walked up to the new superintendent. "We like you much better than we did the last fellow," he said.

The new official beamed. "Why?" he asked.

"Oh, you seem more like one of us."

•

"Your wife used to be terribly nervous. Now she is cool and composed as a cucumber. What cured her?"

"The doctor did. He told her that her kind of nervousness was the usual symptom of advancing age."

•

Father: "Why are you eating with your knife?"

Young son: "My fork leaks."

Two labor leaders in a Washingt hotel lobby following a conference watch as two pretty girls met and kissed ea other affectionately.

"There's another thing that is absolu ly unfair!" remarked one.

"What do you mean?" asked his co panion.

"Women doing men's work," came t reply.

•

Groom: "Now perhaps I'll be permitt to point out a few of your defects."

Bride: "It won't be necessary, darlin I know them. They kept me from getti a better man than you."

•

Captain (on ferry, shouting down crew's quarters): "Is there a mackinto down there big enough to keep two youn ladies warm?"

Voice from below: "No, but there's McPherson who's willing to try!"

•

There is a great difference between th right word and the word that is almo right. For instance, you can call a woma a kitten, but not a cat; a mouse, but n a rat; a chicken, but not a hen; a duc not a goose; a vision, but not a sight.

•

Family Doctor: "I know you wanted boy, so I'm sorry to tell you it's a girl th time."

New Father: "That's all right, Doc. girl was my second choice."

•

"Seasonal occupations," said the ec nomics student, "are those in which a pe son can only work in certain seasons — pe ple like cannery workers, harvest hand and senators."

"And be very careful what you eat . . . you might get hold of some of that chlorophyllin deodorant."